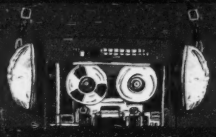

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Going Green

What you need to know (and why you should care) about making your data center more energy efficient.
PAGE 32

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[1]Source: "Business Continuity Unwrapped," Continuity Central, 2006, www.continuitycentral.com/feature0358.htm.

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_INFRASTRUCTURE LOG

_DAY 82: There are so many risks out there. So many things that can happen to our business: natural disasters, spikes in traffic, mergers. How do we prepare? One in three companies don't recover from unplanned downtime! Would we?

_Gil has wrapped everything in the office with bubble wrap. Everything. Just to be safe.

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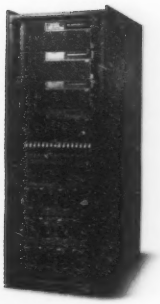
_No more bubble wrap. And I have to mail a package. Great.



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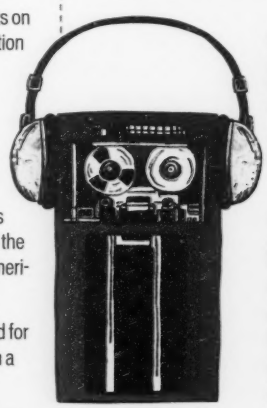

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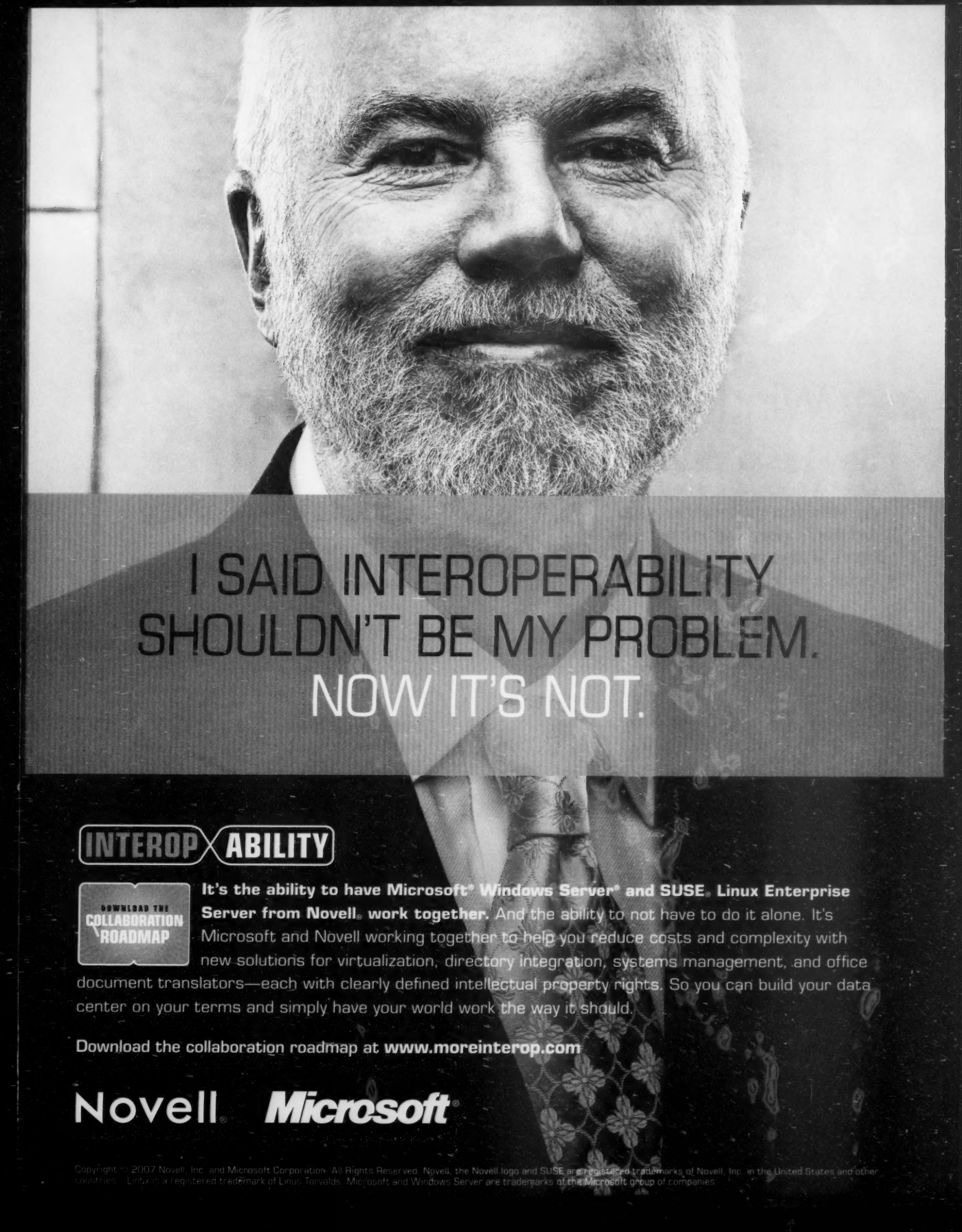
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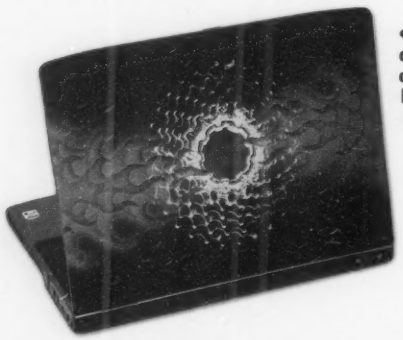
This Week Online

Windows Vista®

Say Hello to Vista SP1

FAQ: The first major update to Vista is due in the first quarter of next year, and there's a lot riding on its success. Here's what you need to know. computerworld.com/software



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Several companies are custom-decorating laptops – even with your own graphics. Is this just a fringe fad or the newest outlet for creative self-expression? computerworld.com/hardware

Your Next Employer's Corporate Culture

Columnist Katherine Spencer Lee has some advice about gauging how well you'll fit into a company's culture before you accept that job offer. computerworld.com/careers

Using Vendors' Experience to Push The Boundaries of Offshoring

OPINION: Application portfolio analysis is the key to deciding which critical applications are good candidates to be maintained offshore. computerworld.com/itmanagement

Blog Spotlight

Facebook Reality Check

Until recently, Facebook was on a publicity roll. The social networking site could seemingly do no wrong, judging by the wildly speculative commentary coming from business and technology bloggers. But *Computerworld*'s Ian Lamont doesn't see what all the buzz is about. computerworld.com/blogs/node/6104

Microsoft's Cavalier Disregard for Customers

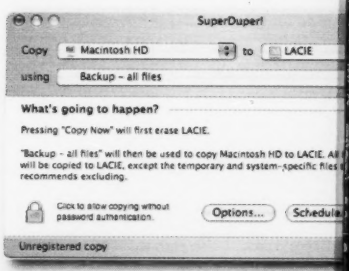
A failure of Microsoft's antipiracy measures cost legitimate customers the user experience they deserve, and that makes Scot Finnie's blood boil. computerworld.com/blogs/node/6097

The iPhone at Two Months

UPDATE: It's all about the interface, and our reviewer is still loving it. computerworld.com/mobilewireless

22 Essential Mac Utilities

Right out of the box, your Mac can do a lot of things. But our selection of top utilities can make using it easier, safer and more fun. computerworld.com/mac



SHARK BAIT BETA

Unclear on the Concept

Filling out expense forms is often a headache of bureaucratic red tape. But when one IT professional tries to file his form remotely, his boss's inability to distinguish "original" from "copy" makes the task even tougher. http://sharkbait.computerworld.com/?q=node/1584

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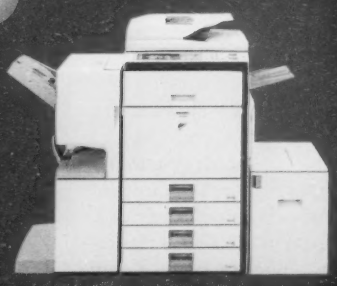

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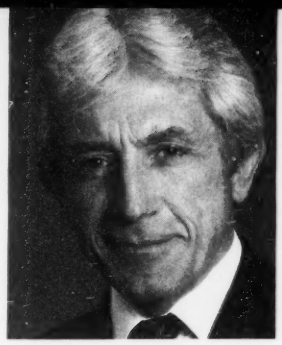
■ EDITOR'S NOTE

Don Tennant

Building Trust



I HAVE A daughter who's married and has two children. Her husband is of African descent. So I suppose if Barak Obama, whose mother is white, can be considered African-American, my grandkids can, too.

The kids — Dhimani and Yasmine — are 8 and 6, respectively, so it'll be a while before they enter the workforce. But suppose they were both 20 years older and they worked in the IT profession. Would that experience be any different for them today than it would be if their dad had been white?

If you're African-American, you're probably nodding your head. But the fact is, you're almost certainly not African-American. According to the Information Technology Senior Management Forum, less than 3% of senior-level IT managers — *Computerworld*'s core readers — are African-American. That figure is consistent with the demographics of our 2007 salary survey, in which 3% of the respondents said they were African-American.

If that percentage seems awfully low, consider also that according to the Information Technology Association of America, from 1996 to 2004 the number of African Americans in the IT industry declined by nearly 9%.

So, what are the obstacles to the recruitment and retention of African Americans in IT? To find out, I spoke with John Peoples, managing partner at Global Lead Management Consulting, a company that last year conducted a survey of African Americans who work in IT management.

Fifty-six percent of the African-American IT professionals Global Lead surveyed said they had considered leaving their current employer in the preceding 12 months. Peoples attributed that widespread lack of job satisfaction in part to concerns about not being treated honestly in the area of career development. "People don't perceive that they're getting candid and straightforward information that will help them improve their performance in their current environment or take greater responsibility over time," he said. The perception among many of the respondents to the survey, Peoples explained, is that their direct supervisors don't serve as advocates for the career advancement of African-American employees.

■ The perception among many African Americans is that their direct supervisors fail in the area of advocacy.

Not surprisingly, according to the study, compensation also ranks high as a factor influencing job satisfaction, and it's the No. 1 consideration at the recruitment stage. That's especially noteworthy when you consider that, according to our salary survey (the full results of which will be published in November), the average annual compensation of the respondents overall was $90,169, while the average for African-American respondents was $81,161.

Peoples said he wasn't surprised by those numbers, and he suggested that the gap in large part has to do with what he called "intangibles" — the subjective factors that determine where in the compensation range an individual falls. "Where there are stronger relationships, you tend to be at the higher end of the subjective range," he said.

According to Peoples, what's needed in order to overcome the obstacles can be encapsulated in one word: trust. Building that trust is accomplished through a demonstration of interest and support over time, with advocacy serving as a key element of that.

"When someone reaches out and mentors or advocates for the career of another person," Peoples said, "there will be inherent benefits with respect to trust." Equally essential, he added, is transparency in communication, "facilitating stronger relationships, one person at a time."

Here's hoping that by the time Dhimani and Yasmine enter the workforce, that advice will have finally sunk in. ■

Don Tennant *is editor in chief of* Computerworld. *Contact him at don_tennant@computerworld.com.*

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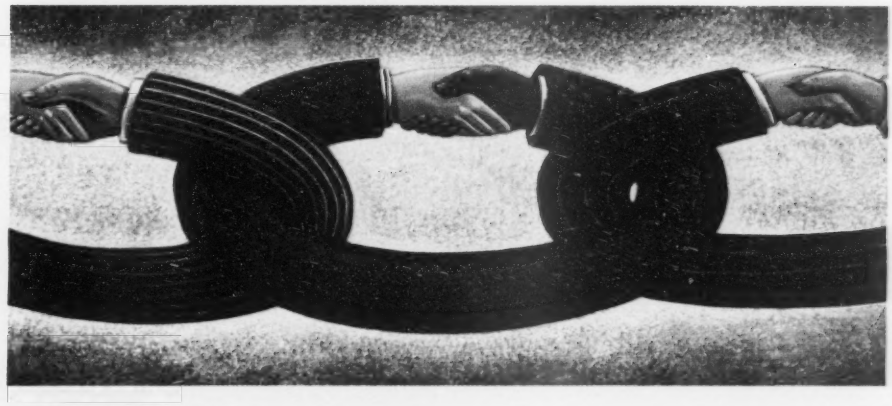

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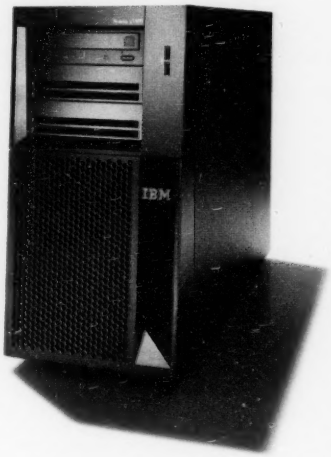

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Is It Paranoia if They *Are* Out to Get You?

I'm baffled. Don Tennant's Editor's Note of Aug. 6 ["Identity Card Paranoia"] describes the overreaction by some U.S. citizens to the idea of a national identification card. Tennant thinks "we'd all be a lot better off" if we all had ID cards. Really? How?

I won't scream about privacy in rebutting this idea, but I'll ask for, shall we say, a return on the investment. Would national IDs help make for a more secure country? Did they help the Spanish prevent its train bombings? Would they serve as something better than passports, driver's licenses or green cards? Would they match up with a national database of, well, anything?

The U.S. has no unified data architecture, no common identification system and not even a universal law enforcement system for fingerprints, felony information or voter registration. The time for an ID card was the 1980s or early '90s, when it might have served to spur the merging of developing database systems into something more systematic. For many reasons, it never happened.

1984 depicts a society controlled by a state that completely controls information. The fear of that type of control isn't unreasonable even if held by unreasonable people. That Fourth of July celebration Tennant attended had its roots in activities by some wild-eyed revolutionaries fighting a paranoid state that tried to dominate access to information, control trade and restrict freedoms.

■ **Prof. Eric Wignall,** *coordinator, Center for Online Teaching & Learning, Governors State University, University Park, Ill., e-wignall@govst.edu*

As a physician with an IT background who has been reading Tennant's columns for a long time, I can attest to how much I generally agree with and admire them. But as a civil libertarian and member of the board of the Philadelphia ACLU, I have to say I was so disappointed by his stand on privacy that I'm e-mailing this from my BlackBerry before even reading the rest of the issue.

You don't have to be one of us crazy liberal ACLUers to appreciate that Orwell was on to something in his novel *1984*, and much of what he predicted has regrettably come true. Our civil liberties, including the right to habeas corpus and the freedom from government intrusion without a warrant, are under attack. While I understand the potential benefits of a national ID card, just as I understand the potential upside to carrying one's personal medical history on a smart card, the potential for rights abuses is there.

When Tennant writes, "The privacy crowd needs to chill a little," he trivializes an issue that joins liberals and conservatives.

■ **David Toub,** *MD, MBA, Wyncote, Pa.*

Claiming that a national ID card is just fine with new immigrants doesn't do much for Tennant's case. Many immigrants come from lands with far fewer freedoms than ours.

■ **Brad Andrews,** *Garland, Texas, andrews@rbacomm.com*

I completely agree with Tennant's comments. I would add that paranoia about keeping your Social Security number private is misplaced. There would be many advantages to having a public unique identifier for everyone, and the wide use of the SSN demonstrates the value of such an identifier. The problems associated with unauthorized dissemination of SSNs have nothing to do with inherent dangers of a unique identifier but instead are the result of inappropriate practices.

There seems to be widespread belief that having someone's SSN is tantamount to having a key that will unlock the doors to that person's private information. To put it in simple terms, the SSN should be the log-in ID, not the PIN or password.

■ **Shawn Pollack,** *Ann Arbor, Mich.*

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THE WEEK AHEAD

WEDNESDAY: The Office 2.0 Conference, focusing on worker mobility and social computing, will start in San Francisco.

WEDNESDAY: The 7th Enterprise Architecture Conference & Exhibition will get under way in Washington. Keynote speakers will include FBI CIO Zalmai Azmi.

THURSDAY: The House Committee on Homeland Security will hold a hearing on civil liberties issues related to the U.S. Department of Homeland Security's use of spy satellites.

GETTY IMAGES

OPERATING SYSTEMS

Microsoft Blames WGA Meltdown on Human Error

MICROSOFT Corp. last week blamed "human error" on the part of its IT staff for a server problem that caused the company's Windows Genuine Advantage (WGA) validation service to incorrectly tag legitimate users of Windows XP and Windows Vista as software pirates.

The software vendor also promised that internal changes are being made to avoid a repeat of the glitch, which affected users for nearly 20 hours on Aug. 24 and 25. Users whose copies of Windows erroneously failed WGA's antipiracy tests were prevented from downloading most software from Microsoft's Web site. And those with Vista were unable to use some of the operating system's features.

Alex Kochis, Microsoft's senior WGA product manager, wrote in a blog posting that the troubles began after "preproduction code" was installed on live servers.

Those systems had yet to be upgraded with another code change designed to enable stronger encryption and decryption of product keys, Kochis added. As a result, "the production servers declined activation and validation requests that should have passed," he wrote.

A quick code rollback fixed the problem on the product-activation servers within 30 minutes, according to Kochis. But it didn't reset the validation servers, which handle legitimacy checks on downloads and other transactions.

"We now realize that we didn't have the right monitoring in place to be sure the fixes had the intended effect," Kochis wrote. He also said that Microsoft is taking steps "such as increasing the speed of escalations and adding checkpoints before changes can be made to production servers."

Earlier last week, Microsoft said that fewer than 12,000 systems were affected worldwide. But users lit up the company's support forums with more than 450 messages about the snafu.

"A system that's not totally reliable really should not be so punitive," said Gartner Inc. analyst Michael Silver.

Michael Cherry, an analyst at Directions on Microsoft in Kirkland, Wash., said he was surprised that it was even possible to accidentally load the wrong code onto live servers. "It just begs the question of, what other things have they not done?" Cherry said.

— Gregg Keizer, with Nancy Gohring of the IDG News Service

WINDOWS

Vista SP1 Set For Release In Early 2008, Microsoft Says

MICROSOFT CORP. last week confirmed plans to ship the first service pack update for Windows Vista in the first quarter of 2008.

The third and final service pack for its predecessor, Windows XP, will ship during the first half of next year.

David Zipkin, a senior product manager for Windows Vista, said the first operating system update will boost performance and fix nagging reliability problems.

A beta release of Vista SP1 will ship next month to no more than 15,000 users, Zipkin added.

"As far as service packs go," said Gartner Inc. analyst Stephen Kleynhans, "this is middle of the road – not too risky and relatively uneventful."

Microsoft said it didn't know how many corporate users have moved to Vista.

–ERIC LAI

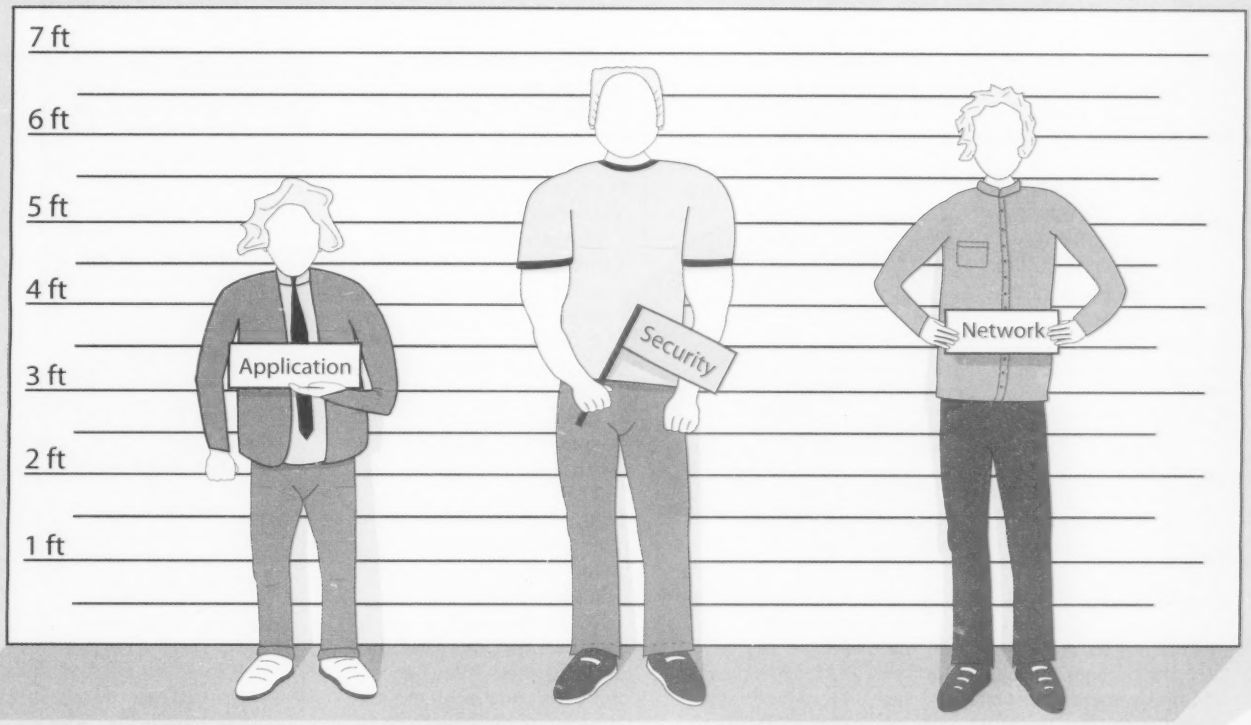
SCHEDULE

SEPTEMBER 2007: First Vista SP1 beta ships to selected audience

EARLY 2008: Second Vista SP1 beta ships

Q1 2008: General release of Vista SP1

Line up network problems.



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HARDWARE

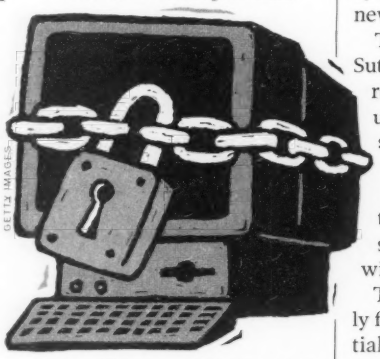
Intel Tries to Tighten PC Security With Second Take on vPro

INTEL CORP. last week released an upgrade to its vPro bundle of automated PC management technologies, saying the new package provides tighter data security for desktop systems than the original version that was launched last year did.

Systems administrators can use the new Core 2 Duo processor and chip set bundle, which was code-named Weybridge, to automatically send software patches to thousands of desktop PCs, according to Intel officials. It also can remotely diagnose broken systems or instruct PCs that aren't being used to enter a sleep state.

But perhaps the biggest improvements come from added security features, said Greg Bryant, general manager of Intel's digital office platform division.

For example, the new offering uses virtualization technology to run security software in a protected section of a system's hard drive. It also includes time-based filters for detecting network attack patterns, as well as on-chip memory for storing a user's network security credentials in hardware.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Dean McCarron, an analyst at Mercury Research Inc. in Cave Creek, Ariz., said vPro won't appeal to many small and midsize companies. "But in the enterprise environment, this kind of thing is pretty critical to keeping costs down," he said. "The last thing you want to do is go out and visit the desktops when you've got 5,000 of them."

Reducing on-site support calls is one of the main reasons why Sutter Health, a not-for-profit health care network that operates primarily in Northern California, plans to buy several thousand Hewlett-Packard systems that include the new version of vPro.

Tim Hearing, CIO for Sutter's Sacramento/Sierra region, said managing his unit's 7,500 desktops and several thousand laptops is complicated by the fact that its five hospitals and 40 clinics are spread across an area with a 100-mile radius.

The organization recently finished a test of the initial vPro offering. Hearing noted that even if vPro was installed on less than 10% of his unit's PCs, it would help cut down on road trips by IT workers. "You need quite a bit of windshield time when you have to go out and touch 700 devices," he said.

— Ben Ames, IDG News Service

Short Takes

- SAP AG has asked a federal judge to order settlement talks in its legal battle with Oracle Corp. SAP argued that Oracle exaggerated claims that workers in an SAP unit hacked into an Oracle database. Oracle opposes the settlement talks.
- The InterNational Committee for Information Technology Standards, the U.S. representative to the ISO standards body, was set yesterday to vote to support Microsoft Corp.'s effort to make its Office Open XML document format an international standard.
- Microsoft has delayed the release date of Windows Server 2008, formerly known as Longhorn. The software is now set to ship during the first quarter of 2008 rather than by the end of this year.
- Dell Inc. reported that profits for its second fiscal quarter rose 46% to $733 million on sales of $14.8 billion. The rate of increase may change when it completes work on restating earnings.

LEGAL ISSUES

Indiana Court Dismisses Class-Action Breach Suit

A FEDERAL appeals court in Indiana late last month dismissed a class-action lawsuit seeking undisclosed damages related to a corporate data breach at an Evansville, Ind.-based financial services firm.

The ruling is the latest in a series of decisions by U.S. courts rejecting lawsuits by consumers seeking damages when personal data is exposed by corporate breaches.

On Aug. 23, the U.S. Court of Appeals for the Seventh Circuit dismissed the lawsuit against Old National Bancorp over a 2005 data breach, concluding that the plaintiffs failed to show that the incident caused financial losses.

Similar class-action lawsuits in Ohio, Minnesota and Arizona have been dismissed by judges over the past couple of years.

The Indiana suit was filed on behalf of thousands of Old National Bancorp customers whose personal and financial data was exposed in an intrusion that the court described as "sophisticated, intentional and malicious."

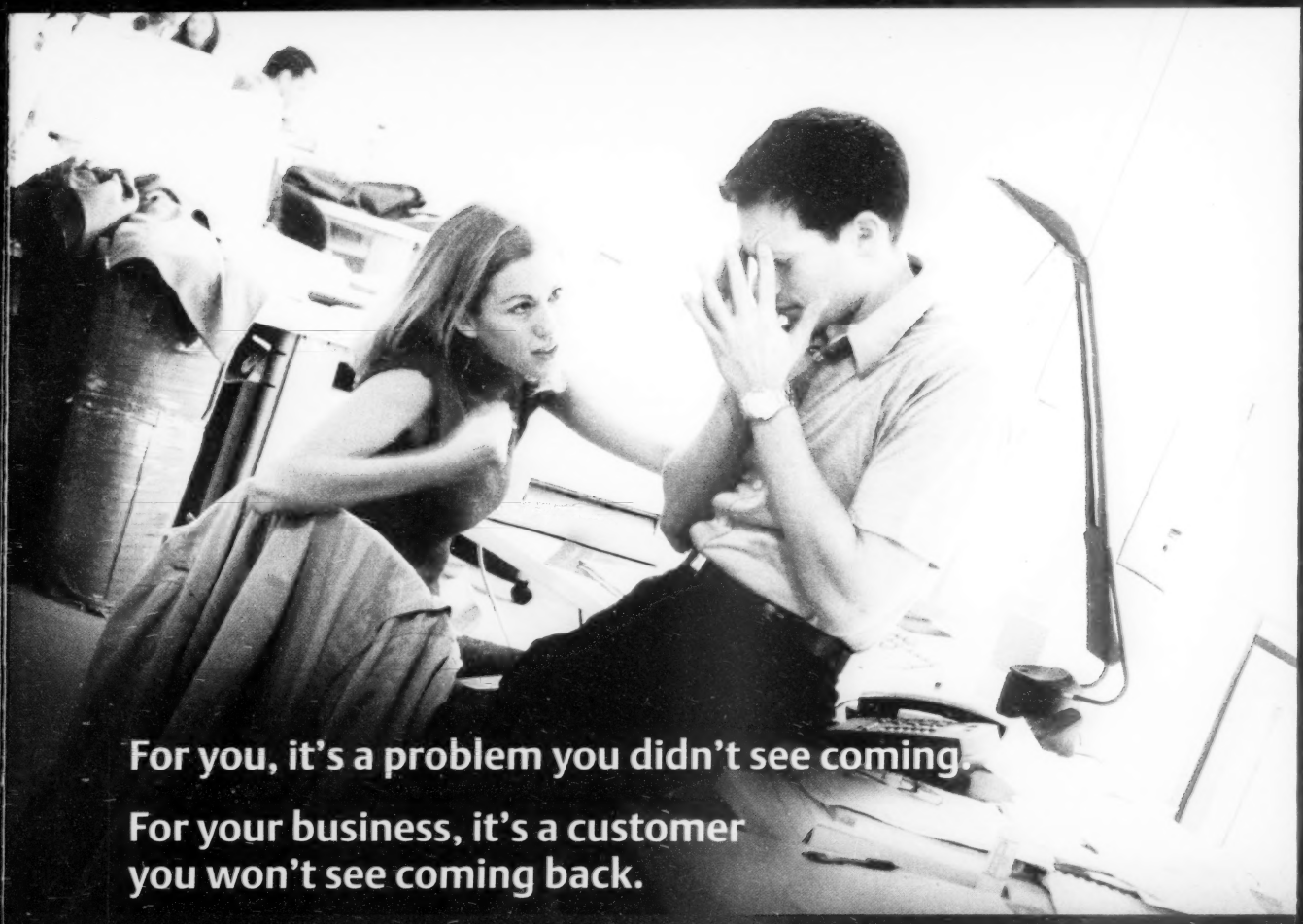
The plaintiffs sought compensation for "all economic and emotional damages" caused by the data exposure.

THROWN OUT OF COURT

Two reasons why the court dismissed the lawsuit:
- **The plaintiffs didn't allege that the breach caused them "cognizable injury."**
- **Indiana law prohibits financial awards for "potential economic damages."**

The recent decisions indicate that states need to overhaul their data-breach laws, as Minnesota and California have done, said Christopher Pierson, an attorney in the Phoenix office of law firm Lewis and Roca LLP.

– JAIKUMAR VIJAYAN



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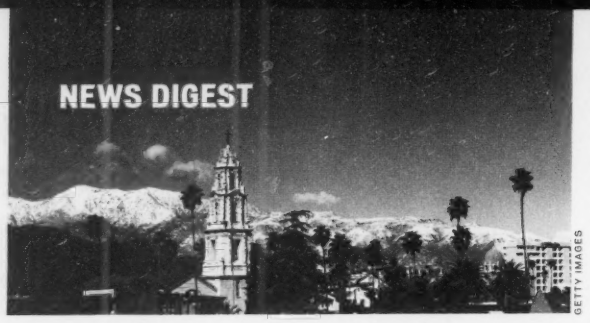
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OUTSOURCING

City CIO Keeps Outsourcer On Contracting Hot Seat

Affiliated Computer Services Inc. last week announced an outsourcing contract extension with the municipal government of Riverside, Calif., that could be worth up to $17 million over three years. But in four months, Riverside CIO Steve Reneker plans to seek new bids to see if he can improve on the city's deal with ACS.

Reneker said he doesn't want Dallas-based ACS, or any other IT outsourcing vendor that he may hire in the future, to get too comfortable. So Riverside's contract with ACS is guaranteed for just one year through next July, with two one-year renewal options.

Short outsourcing contracts are best, Reneker believes. Avoiding long-term commitments to a vendor "helps us to be nimble," he said. "It helps us leverage the best practices in the industry rather than waiting for the end of the term of the contract to apply them."

The new contract is structured much differently than the initial 10-year deal that Riverside (pictured above) signed with ACS in 1997. Reneker said that before he was hired as Riverside's CIO in 2005, the outsourcing vendor's contract manager was also heading the city's IT department. "That didn't work out well — obviously, their motivator was to generate revenue and not to save the city money," he said.

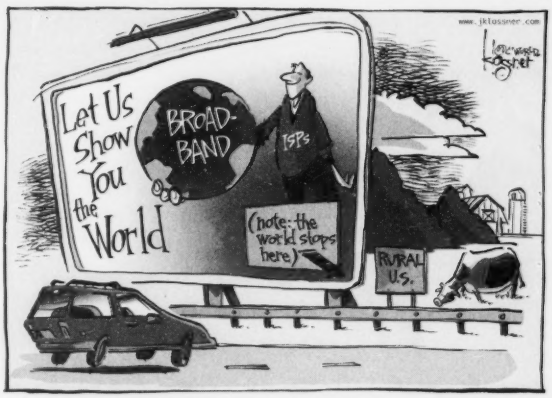
ACS is doing good work for the city now, according to Reneker. But he isn't pleased with the company's rate structure. "We're going to see if anyone else can meet or beat that," he said.

ACS confirmed that the contract will be rebid as part of the business process put in place by the city.

However, Reneker's goal isn't to repeat the bidding process annually. "If things are going really well," he said, "we don't want to go back out to bid [again]."

— *Patrick Thibodeau*

BETWEEN THE LINES *By John Klossner*



BENCHMARKS LAST WEEK

The International Air Transport Association, which includes more than 240 airlines worldwide, said it placed its last order for paper tickets as it moves forward with a plan to fully convert to electronic ticketing by next June.

Acer Inc. announced plans to buy Gateway Inc. for $710 million in cash. The acquisition would push Taiwan-based Acer past Lenovo Group Ltd. in shipments, making it the third-largest PC vendor.

TWO YEARS AGO: Hurricane Katrina battered sections of the Gulf Coast, killing more than 1,600 people and causing widespread disruptions to IT operations and other services.

Global Dispatches

China Probing Hack Of German PCs

BEIJING – Chinese Premier Wen Jiabao last week described reports of Chinese hackers breaking into German computers as a matter of "grave concern" and said his country will work with Germany to resolve the matter.

At a press conference with Wen here last week, German Chancellor Angela Merkel said China must "respect a set of game rules" and protect intellectual property rights to improve relations with industrialized countries.

The two leaders were responding to a report in the German press that Chinese hackers had infected German government computers with spyware.

A spokesman at the German Federal Ministry of the Interior declined to comment on the alleged hacking incident. But he said the federal government is "making a huge effort to ensure that government systems remain protected from outside attacks."

John Blau,
IDG News Service

Yahoo Seeks Dismissal of Torture Lawsuit

HONG KONG – Yahoo Inc. last week asked a California federal court to dismiss a lawsuit brought against the company by jailed Chinese dissidents.

The lawsuit, filed in April, alleges that Yahoo and its Yahoo Hong Kong Ltd. subsidiary violated a series of U.S. and international laws by providing information to the Chinese government that led to the plaintiffs' arrest and torture.

Among other things, Yahoo's filing contends that the suit involves a Chinese political case and is not within the jurisdiction of U.S. courts.

Yahoo also argued that the company and its Chinese subsidiaries must comply with Chinese laws.

Juan Carlos Perez,
IDG News Service

BRIEFLY NOTED

A senior executive at Deutsche Telekom AG last week confirmed that the Bonn telecommunications firm is in talks with Apple Inc. regarding selling the iPhone mobile device in Germany.

John Blau, *IDG News Service*

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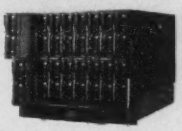

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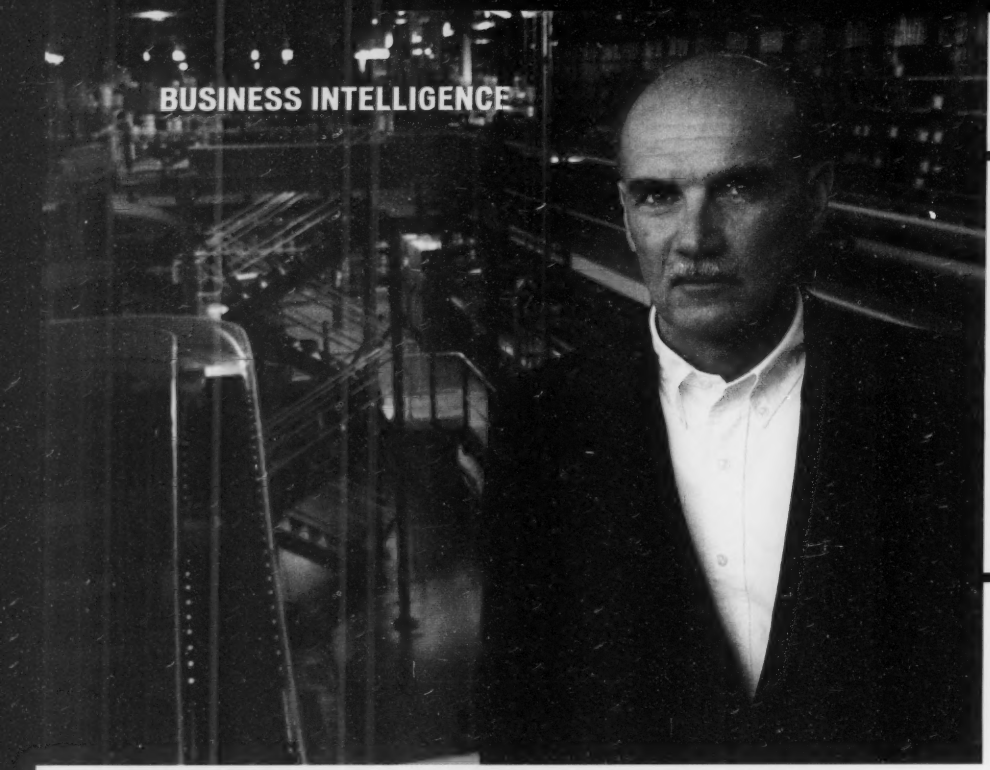

> **"We're trying to provide [salespeople] with a driving sequence that minimizes the miles . . . fuel costs and other expenses. We also use this to try to optimize the assignment of territories.**
>
> **JIM HONERKAMP,** CIO, THE HILLMAN GROUP INC.

IT Opens Data Warehouses to External Users

Aims to streamline supply chains, boost customer service. **By Heather Havenstein**

CORPORATE Express US Inc. this fall hopes to enable 1,000 of its largest customers to run reports and analyze purchasing patterns using information stored in its internal data warehouse.

The office supply company is one of many firms that have turned to a variety of technologies over the past couple of years to let external users securely access specific corporate data.

IT executives say such projects can improve customer service, streamline supply chains and let off-site employees access internal business intelligence (BI) applications.

Matt Schwartz, director of business analysis at Corporate Express, said the company moved quickly early this year to select a technology that could give its top customers access to purchasing data, after its hand was forced by similar efforts at rivals Office Depot Inc. and Staples Inc.

He said that customers started "coming to us and saying, 'We want this. Your competitors are offering it, [and] for me to stay loyal to you, you need to offer this.' "

Broomfield, Colo.-based Corporate Express decided to use a data warehouse appliance that would enable 10,000 users at 1,000 customers to keep track of their purchases, Schwartz said.

Data warehouse appliances bundle high-performance hardware, software and storage devices in a single device that is preconfigured to run a specific task, such as strategic analysis.

Corporate Express, which now runs an Oracle 10g-based enterprise data warehouse, plans to use Netezza Corp.'s Performance Server appliance to power a new data mart that will let customers run Web-based queries about their purchasing histories, Schwartz said.

The company will continue to use the Oracle database internally as its enterprise data warehouse, he noted.

The appliance from Framingham, Mass.-based Netezza will provide procurement information to customers through dashboards and standard reports. It will also let uses drill down to transaction-level data, Schwartz said.

Corporate Express chose the appliance technology for its easy-to-use features and performance capabilities, he said.

"With our Oracle platform, the performance across thousands of customers wasn't sufficient for sub-10-second response times," he explained.

Sales personnel at Corporate Express, which also uses BI software from MicroStrategy Inc., are testing the Netezza appliance this summer. The software from McLean, Va.-based MicroStrategy authenticates the users and encrypts all the data to be presented outside the company's firewall, Schwartz said.

Corporate Express hasn't yet encountered any challenges in the testing process, he added.

The Hillman Group Inc., a Cincinnati-based manufacturer and supplier of hardware such as nuts, bolts and key-engraving systems, took a different approach to providing salespeople work-

Continued on page 20

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The Highly Reliable Times

VOLUME 1 – ISSUE 4

Windows Server 2003

STATE OF ILLINOIS VOTES FOR WINDOWS SERVER OVER LINUX

Tom Nagy for The Highly Reliable Times

THE STATE OF ILLINOIS covers 56,400 square miles, with a population of about 13 million.

"It would have meant too much pain for us to move to Linux. For us, stacking up mismatched parts doesn't make good business sense. That's why we went with Windows Server."

– Paul Campbell, former Director, Illinois Department of Centralized Management Services

Risk of Linux Too Great–State Government Needed Reliability

By MICHAEL BETTENDORF

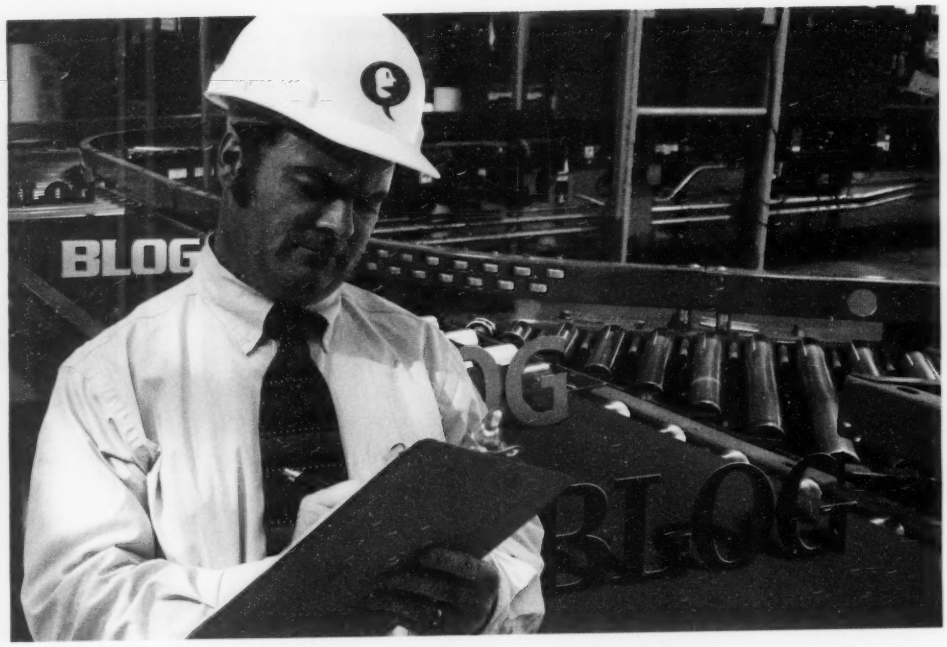
SPRINGFIELD, Ill. – As part of a massive effort to modernize and standardize its IT infrastructure, the State of Illinois had narrowed the choice down to either a commercial distribution of Linux or Windows Server® 2003 as the foundation for the new system. The state's IT staff had specific criteria that had to be met, and reliability was at the top of the list. After an evaluation of the two platforms, the state simply found too many questions around Linux.

"We can't take big risks with our technology," said Paul Campbell, former Director of the Illinois Department of Central Management Services. "State government needs trusted, tested technology that's reliable and predictable." By choosing Windows Server 2003, Campbell felt the state was investing in a well-tested, well-integrated technology that would deliver the high system reliability he expected. With Linux, he wasn't so sure: "It would have meant too much pain for us to move to a Linux-based system. In government, IT is all about consistency and reliability. So for us, stacking up mismatched parts doesn't make good business sense." In addition, Campbell had confidence that Windows Server would be a good choice for the future, saying, "Part of the reason we felt we could rely on Windows Server is that there's a great roadmap for the platform. With Linux, there is no roadmap."

For the full State of Illinois case study, plus other case studies and independent research findings on the reliability of Windows Server versus Linux, visit our Web site at microsoft.com/getthefacts

BREAKING NEWS: Colleagues baffled by IT director's calmness

Since achieving rock-solid reliability from a new Windows Server implementation, Paul Campbell (left) has been calm and "almost Zen-like," according to one associate. *– Continued on Page B3*



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Building A Data Center in 60 Days
Data Center Knowledge – The facilities staff at Pipe Networks is live-blogging its bid to build a new data center in just 60 days. The effort began back on April 16 with an empty room in Brisbane, Australia, and is entering the stretch run with a completion deadline of 9 am EST Friday (June 15). Pipe Networks has put the...
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THE COMPUTERWORLD BLOG NETWORK

Continued from page 16

ing outside of the office with access to internal systems, said CIO Jim Honerkamp.

About two years ago, the company created a so-called virtual data warehouse to let 800 remote employees access BI applications over the Web, he said.

Instead of moving data from transactional systems to a database for analysis, Hillman uses adapters from Information Builders Inc. subsidiary iWay Software Inc. to get direct access to those systems without having to physically integrate underlying data, Honerkamp said.

With the virtual data warehouse, he said, the company was able to avoid building a multimillion-dollar physical data warehouse for the external users.

Hillman uses WebFocus BI software from New York-based Information Builders to let users view sales reports and drill down into BI reports overlaid with navigation data from a geographic information system (GIS), Honerkamp said. "We'll use this technology to map out the most efficient route for a sales rep to follow on a daily basis," he said.

"We're trying to provide them with a driving sequence that minimizes the miles . . . fuel costs and other expenses," Honerkamp said. "We also use this to try to optimize the assignment of territories."

Hillman has also married BI with GIS maps to optimize which distribution center ships products to customers, to ensure that the most cost-effective route is used, he noted.

A year ago Canvas Systems LLC, which sells used and refurbished IT equipment to businesses, built a portal to give an "open-kimono view into our business" for the customers that provide it with products on consignment, said Steve Hyser, the company's IT lifecycle manager.

Norcross, Ga.-based Canvas Systems moves data from its transactional systems to a Microsoft SQL Server database that then allows those customers to log into the portal — which is updated every 10 to 15 minutes — to track their IT equipment as it is refurbished and made available for sale.

"They can see each individual item and what we intend to sell it for," Hyser said. "They can see what their proceeds are. They basically have a soup-to-nuts tracking mechanism."

As a result, he added, there are no surprises and thus no time-consuming calls from customers questioning a bill or asking where an item is in the sales pipeline.

BEYOND THE FIREWALL

Colin White, president of BI Research in Ashland, Ore., noted that many companies that retrenched to focus on internal enterprise data access following the dot-com bust are beginning to consider making data available outside the firewall again.

"If I'm a funds investor buying funds and I can see information about my funds and how well they're doing, that makes me a happier customer," White noted.

"Companies get improved customer satisfaction and retention," he said. "They also [reduce] the number of calls coming into their call center."

The informatics division of Premier Inc., a San Diego-based hospital performance improvement alliance owned by 200 health care organizations, this spring dumped its system for providing data analysis to 400 hospitals, said senior architect Chris Stewart.

The division replaced its IBM Red Brick Warehouse SQL-based relational database with a Netezza data warehouse appliance to handle the core analysis it offers to the hospitals, he said.

The older system would run the required reports for the hospitals, but it couldn't tell users whether the query would take several hours or several minutes, Stewart said. Using the Netezza appliance, "you can get that analysis back to the customers in a much more predictable fashion," he added.

The new system speeds the analysis and provides an estimated completion time for hospital administrators' queries, such as how a facility's treatment of elderly patients with pneumonia compares with that of other hospitals, Stewart said.

The company first installed a Netezza warehouse appliance in 2003 to analyze selected pharmacy data, Stewart said. Premier moved to expand its use of the Netezza technology this year, after gaining confidence in its functionality and performance, he noted.

Performance is especially important to Premier because it places very strong security demands on the 3TB data warehouse, Stewart said.

For example, he said, the health care provider added rules to the analysis process to verify whether each component of a query has data from enough hospitals so that the identity of the facility making the query isn't obvious.

He pointed out that this verification takes place while the query is running, significantly increasing the load on the database. ■

Satisfying a Diverse External User Base

COMPANIES LOOKING to open data warehouses to external users need to turn a careful eye to the needs of their new user base and then provide the best tools for meeting those needs.

For example, some companies' external users may need tools built specifically to drill deep into data, while others might be satisfied with simpler technology developed to create quick summary reports, experts said.

And then there are organizations that must offer tools that can satisfy both camps, like First American CoreLogic Inc.'s LoanPerformance division.

Both power users and less technically adept traders from banks and investment firms are given access to LoanPerformance's mortgage securities database, which contains information on about 17 million mortgages, said Carlos Santiago, vice president of data content at the San Francisco-based firm.

While the power users need to slice and dice data based on whatever attributes they can think of, traders need quick answers to simple questions, he said.

To meet the needs of both, LoanPerformance turned to Sybase Inc.'s IQ analytics server, which is designed to deliver fast results for BI applications. It also uses reporting tools from MicroStrategy.

"You want to give users the maximum flexibility to produce any kind of report they might imagine," Santiago said, "but you want to make it easy enough so a nontechnical person can use it."

– HEATHER HAVENSTEIN

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Philly Prepares to Open Faucet on New System – After Opening Its Wallet

Efforts to replace mainframe water billing app have cost almost $47M over 20 years, report says. By Matt Hamblen

A MUNICIPAL WATER billing system project in Philadelphia that was revived and significantly revamped last January is now ahead of schedule and should be completed by the start of 2008, the city's CIO says.

But this is the fifth iteration of a two-decade quest to replace the city's mainframe-based billing system, which still relies on punch cards. And the overall cost of the replacement effort could reach nearly $47 million, according to an internal report that takes city officials to task for a series of project management lapses over the years.

For example, the report, which was issued Aug. 20 by Philadelphia Controller Alan Butkovitz, said that the goals of earlier projects weren't clearly defined and that there was a lack of buy-in from the city's water department and water revenue bureau. In addition, the report pointed to problems with staffing levels, project oversight and business process re-engineering efforts.

The city "spent money for years for nothing," Butkovitz said in an interview after the 29-page report was released. "It doesn't seem to me that water billing should be so complex."

In response, Philadelphia CIO Terry Phillis called the report "old news" and said the problems it recounts have been addressed since he took over as head of the city's IT unit last September.

"Butkovitz is trying to do the right thing, and obviously, a lot has been spent," Phillis said. "[But] I have a little problem with his only looking at the past and not being willing to admit how the current project is doing. When it's done, he'll say it was a good project."

The current initiative is a revision of Project Ocean, which began in 2002. The project plan initially called for the city to replace its now-30-year-old, custom-built mainframe water billing system with Oracle ERP applications. But work was suspended in October 2005 after the city had spent $18.9 million on Project Ocean without getting a working system.

Eventually, city officials decided to scrap most of the Oracle applications and instead use off-the-shelf water billing software developed by Prophecy International Pty. in Adelaide, Australia.

Phillis said it will cost $6.7 million to deploy the Prophecy software, bringing the city's total tab for Project Ocean to $25.6 million. He added that the remainder of the $47 million in overall costs cited by Butkovitz was spent between 1987 and 2002 on three other projects that were all aborted.

■ The revised project is being jointly overseen by managers from the IT unit, the water department and the water revenue bureau.

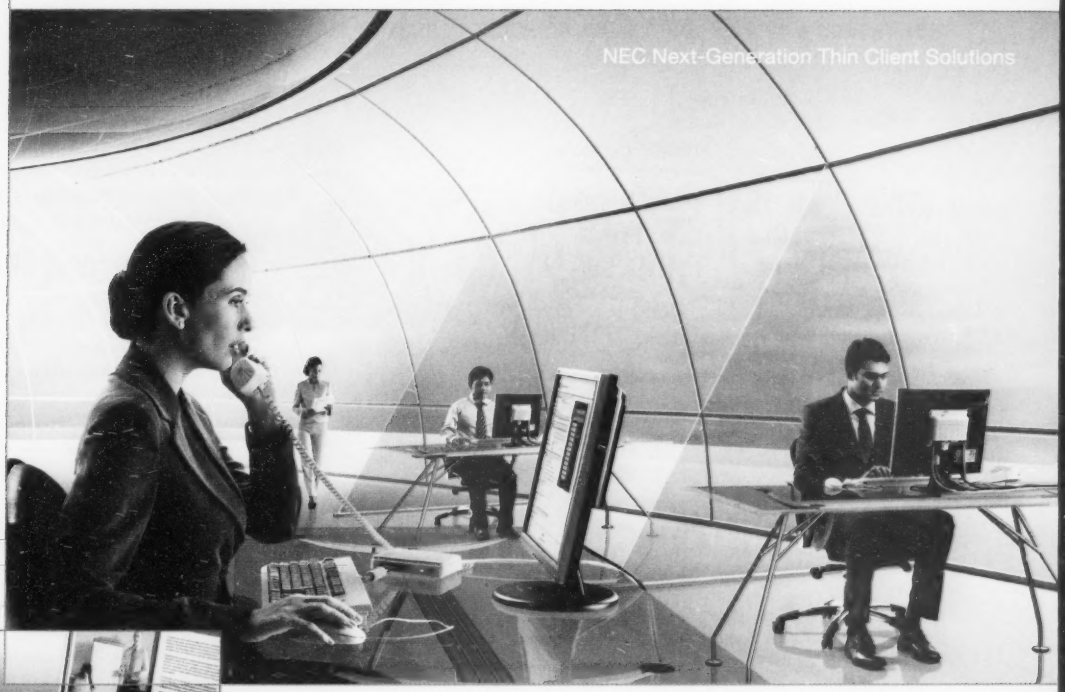
"Drawing comparisons with the total water billing project costs and Project Ocean costs is a little squirrelly," Phillis said. He noted that most of the earlier system replacement efforts were run by Philadelphia's finance department, not by the IT unit, which is formally called the Mayor's Office of Information Services.

Initially, Project Ocean also was controlled by the finance department, but then it was taken over by the IT operation. The revised project is being jointly overseen by managers from the IT unit, the water department and the water revenue bureau. Phillis put himself directly in charge of the software integration effort.

The team is adjusting the city's water billing business processes instead of trying to fit the new system to the old ones, Phillis said.

He noted that a test run of two billing cycles for 60,000 water customers was successfully completed in May, and he said he expects bills for all of the city's 550,000 customers to be processed by the new system starting Jan. 2. That's a month earlier than the start-up date projected earlier this year.

"It's almost been a fun project," Phillis said, "because we're all working together." ■



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On the Mark

HOT TRENDS ■ NEW PRODUCT NEWS ■ INDUSTRY BUZZ BY MARK HALL

MATTHEW FAULKNER

How Green Was My Refresh

WHERE ARE YOU in the hardware refresh cycle? Are you tossing old gear and bringing in cool new PCs, laptops, servers and other spiffy hardware? Or perhaps you'll be doing it next year. It's probably one or the other, since swapping out hardware is a constant operational process for IT. It's either being done or being planned.

If you normally offer old systems to employees, you'd better be certain that all of your company's data has been zapped from the machine, warns Jeff Ziegler, CEO of TechTurn Inc. in Austin. If it's one or two machines, no big deal. But when hundreds or thousands of devices are being refreshed, he says, you're better off hiring TechTurn to do it.

10M
Number of computing devices TechTurn forecasts it will recycle or resell in 2009.

For one thing, claims Ziegler, TechTurn resells or recycles 100% of everything it handles. That means your CIO gets that good green feeling from doing the right thing with electronic waste. And your CFO gets a different kind of good green feeling when TechTurn sends him a check from the proceeds of your reclaimed computers. Ziegler says that check often matches or exceeds the cost of his firm's fully auditable services.

You'd think most IT shops would be hip to this win-win option for handling electronic waste, but Ziegler says no. "E-waste is just not on anyone's radar," he laments. Some IT folks are catching on, though. Ziegler says TechTurn will process 1.5 million devices in 2007.

The Charitable Choice

Another option for disposal is to donate old machines to charity. Lots of local organizations retool used equipment and pass it along to the poor, but be sure to work with one that pledges to do a thorough data deletion. Jeff Robinson, laptop coordinator at FreeGeek in Portland, Ore., says his organization never boots a hard drive before it's fully wiped clean of information. His group, one of seven FreeGeek centers in six states and British Columbia, has a goal to get computers into the hands of those who can least afford them. "We're helping the needy get nerdy," he says. The Portland group builds about 120 machines per month from the many donated computers it gets, thus keeping e-waste out of landfills.

60%
Percentage of Oregon PCs that end up in landfills, says the state's Department of Environmental Quality.

A Burning Bush Online

The Internet has cut out the middleman by connecting consumers directly to even the largest companies. And it's doing the same for religion. Tom Nickell, CEO of Lightworks New Media Inc. in Lexington, Ky., advises church leaders "to get very well acquainted with the Web and how to use it." If they don't, he warns, "they could lose control" of church members who become attracted to faiths they find online. In that regard, says Nickell, "religion is not that different from the business world."

Indeed, for Lightworks, religion is the business. The company provides Web-based services to all manner of faith-based organizations, including Catholic, Jewish, Muslim and Protestant groups. And there seems to be a pretty good-size market for ideas about faith. According to PewInternet.org, 64% of Americans who use the Web have searched for faith-related information.

Religions need help online, Nickell claims.

Lightworks recently launched its FaithStreams Network, an interdenominational social networking site. The first channel on the network, YouthRoots, targets the young, but Nickell says the company will soon open channels for families and church leaders. "We expect to see people reach across denominational lines" to discuss subjects that cut across religions, he says — everything from Iraq to Harry Potter. The company will introduce wiki tools in the coming year, Nickell adds. Pricing varies based on the Web services contracted. ■

Congratulations to Our Finalists!

The "Best Practices in Business Intelligence" Award Finalists and Honorees will be recognized Wednesday, September 26th.

Computerworld's Business Intelligence Perspectives proudly presents the fourth "Best Practices in Business Intelligence" Awards Program, honoring top IT user "best practice" case studies selected from a field of qualified nominees.

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Creating an Agile BI Infrastructure	• Allegheny County Department of Human Services, Pennsylvania • American Modern Insurance Group, Ohio • BlueCross BlueShield of Tennessee, Tennessee • Broward County Public Schools, Florida • College of Humanities, Arts, and Social Sciences, California
Driving Process Management with BI	• Airlines Reporting Corporation, Virginia • Accenture, Illinois • Cox Enterprises, Inc., Georgia • Geisinger Health System, Pennsylvania • Maine Medical Center, Maine
Expediting Information Delivery, Retrieval, Reporting and Analysis	• ADP Dealer Services, Oregon • Avnet, Inc., Arizona • Department of Defense, Health Affairs, Virginia • Ford Motor Company, Michigan • Pennsylvania Bureau of Child Support Enforcement, Pennsylvania
Innovation and Promise in Business Intelligence	• Airlines Reporting Corporation, Virginia • Carlson Marketing Worldwide, Minnesota • Fiserv ISS, Colorado • Nationwide Insurance, Ohio • Sigma-Aldrich Corp., Missouri

Judging Criteria

Judges will evaluate and rank the finalists in each category according to their substantiated Business Intelligence solution attributes and achievements against a set of criteria such as:

- Strategic importance to the business.
- Positive impact on other business/organization units.
- Substantive customer impact (service, retention, acquisition).
- Provides a strategic advantage to the business/organization while anticipating and accommodating the deployment of future initiatives.
- Financial return and measurable payback (returns on investment, assets, resources) through created/protected revenue opportunities or cost savings.
- Addresses challenges of data, information and application security, etc.

Thank you to our "Best Practices in Business Intelligence" Judges for 2007:

- Jim Foote, ADP Dealer Services
- Heather Havenstein, Computerworld
- Rob Hilliard, Reader's Digest
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- Matthew Meinert, U.S. Army (C-E LCMC)
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- Ron Paulus, MD, Geisinger Health System
- Michael Scarbrough, Wells Fargo
- Joe Taylor, Health Care Service Corp.
- Rebecca Wetterman, Nucleus Research
- Stephen Wetzel, Maricopa County Arizona

PHOTOS BY JOHN HARDING

■ THE GRILL

Peter J. Williamson

Author Peter J. Williamson talks about **China's novel approach to business**, its innovative take on **innovation** and its **'Wild East' cowboys.**

In Dragons at Your Door: How Chinese Cost Innovation Is Disrupting Global Competition *(Harvard Business School Press, 2007), Peter J. Williamson and Ming Zeng describe how Chinese companies have cornered global markets by creatively managing costs and leveraging labor.*

What's so different about the way Chinese companies approach business and global competition? They have a mentality of making the most of limited resources. They're always looking for ways to leverage their advantages. They think of innovation in terms of, "How can I do more with less?"

Second, they don't have much baggage. They're very open to taking ideas from other people and molding them to what they're doing.

More so than U.S. companies? Definitely. Their idea is, "Let's try something new," rather than, "Let's try to protect our position." Plus, they have nothing to lose. They're the new kids on the

Continued on page 28

Dossier

Name: Peter J. Williamson

Title: Professor of international management and Asian business

Organization: INSEAD

Location: Fontainebleau, France; and Singapore

Most interesting thing people don't know about him: "My first job was running a play center for 6-year-olds – perhaps good training for a university professor after all?"

Favorite technology: Wi-Fi hot spots

Favorite nonwork pastime: Trekking in remote regions like the Himalayas and Tierra del Fuego

Last book read: *Terra Australis Incognita – the Spanish Search for the Mysterious Great South Land*, by Miriam Estensen.

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"Don't panic over a few high-profile blunders by Chinese sourcing partners.

Continued from page 26
block; they don't have a heritage to protect.

Is Chinese business an immediate threat to Western businesses? In five to 10 years, these companies will have changed the playing field, either by putting on enormous pressure to improve the value for the money or by attacking the loose bricks in the walls that people have built up. The reason that's more dangerous is that it creeps up on you without your even noticing.

In the book, you point out that going upmarket isn't necessarily the answer to competing with the Chinese. That's one of the key insights in understanding what the Chinese are doing. As a Western company, you say, "Well, I can surrender some of the low-end, low-profit segments to these people."

[Chinese firms] then gain experience, and they gain volume, and they invest in hiring expertise. Shanghai Zhenhua Port Machinery Co. hired 800 engineers through reinvestment, and that allowed them to develop products more efficiently to move upmarket. As [the Chinese] relentlessly move [up], [Westerners] retreat to lower-volume markets. Eventually, [Western companies] don't have enough volume to keep up with costs.

To get out of this cycle, combine cost innovation with skills in your company, making sure you can improve the value for the money while you cut costs to move upmarket. Think about whether you should be more serious about tapping into growth markets in places like China and India. [And] if you can't beat them, join them. Form an alliance with them to combine your strengths.

You write a lot in the book about "cost innovation." What is this, and how do Chinese companies apply it? If I say the term *innovation*, people think of more functionality or higher value to the product. The Chinese have said there's another innovation game you can play: Think innovatively to take costs out of the business or take a high-cost technology and make it cheaper to place it into the mass market.

Where have the Chinese done this? One of the most dramatic examples is the technology used for digital direct X-rays. This technology uses a system that digitizes the X-ray and places it on a computer network. [Companies] who were leading in this business, GE and Philips, applied this technology to heart scans. The Chinese decided to apply this to other medical areas. A company called Zhongxing Medical created a direct digital radiography machine at a cost of about $20,000, compared with $150,000 to $200,000 for other companies to build them. Zhongxing took 50% of the market from GE in China and is moving into the international market.

Which high-tech industries in China pose the greatest threat? You're already seeing companies like Lenovo, which purchased IBM's PC business. I think it's going to be hardware that's leading the charge. For example, Dawning, a company that created high-performance computers, did this not by designing a faster chip but by writing code that links the chips together.

Isn't it true that Chinese companies lag in adopting some newer technologies? [Western] executives [think] they don't have the same level of automated controls that plants have in the U.S. It's not because the Chinese haven't been able to apply those technologies; in China, there's more emphasis on using lower-cost workers on quality assurance to provide them more flexibility.

It seems that lately they've been using that flexibility to the detriment of their customers. What's your take on the recent trouble with Chinese exports? In the "Wild East" capitalism of today's China, there are cowboys who are willing to cut corners and risk safety for a quick buck. But the outcry is disproportionate. Did we stop buying Ford vehicles when the company recalled a staggering 527,000 Escape SUVs made in Kansas City and Avon Lake, Ohio? We need to resist the urge to damn all Chinese manufacturers for the faults of a few. Thousands of companies reliably source products from China — from Apple's iPod to Nike athletic shoes. These companies have learned that separating the cowboys from reliable suppliers in China means developing an experienced team on the ground to monitor quality and adherence to standards. The first lesson here: Don't panic over a few high-profile blunders by Chinese sourcing partners.

The second danger is that managers will give in to the myth that all Chinese competitors are simply low quality, low price. Don't allow such a delusion to cloud your thinking. If you do, you are likely to miss the fact that the best Chinese companies are using cost innovation to rewrite the rules of the global competitive game.

— *Interview by* **Thomas Hoffman**

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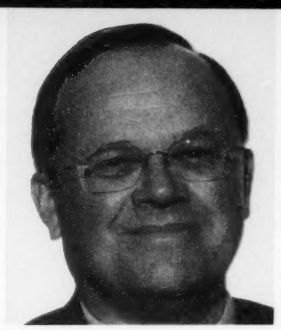
■ OPINION

Bruce A. Stewart

Moving Beyond Process Design



FOR A GOOD DECADE NOW, most IT organizations have been strongly focused on business process design. With businesses investing big bucks in ERP, supply chain management and customer relationship management systems, process design has been king, and in many cases it has met real business needs. But more and more, with those implementations mostly behind us, process design will take a back seat to other skills.

The best way to illustrate this is by example. A few years ago, a bank decided to get serious about managing its retail customer relationships more effectively. It installed a well-known CRM package that would give branch bankers all the customer data they would need for effective marketing; they would be able to offer the right products every time they interacted with customers.

But the expected growth did not occur. Calling on its best business thinkers and an able IT organization, the bank redesigned its processes. Everyone involved was certain that they had defined a branch process that was complete.

It wasn't, and in fact, it made things worse. Customers began leaving in droves, often closing their accounts shortly after interacting with an account manager. The process design seemed to be having the opposite effect from what was intended. Where had it gone wrong?

To its credit, the bank reacted quickly, conducting a customer survey that started to reveal some answers. It discovered that customers were finding even the simplest of transactions time-consuming, aggravating, intrusive and overbearing. If they wanted to convert cash into certificates of deposit, the account manager, guided by the CRM, bombarded them with questions about every aspect of their finances. If they wanted to upgrade their credit card to one laden with extras, they were grilled as thoroughly as someone taking out a mortgage. Opening a second account ended up being a tedious rundown on all the financial products the bank offered.

■ Bank customers found every transaction aggravating and intrusive.

Talking to account managers, it became clear that they shared customers' frustration and felt helpless to escape the rigid process design.

The bank once again turned to IT, but this time the focus would not be on the process itself, but rather on the imperative of fulfilling customer requests. IT undertook an architecture it called "the really good bank." It called for radically simplified processes. The CRM system remained, but the rigid workflows were removed.

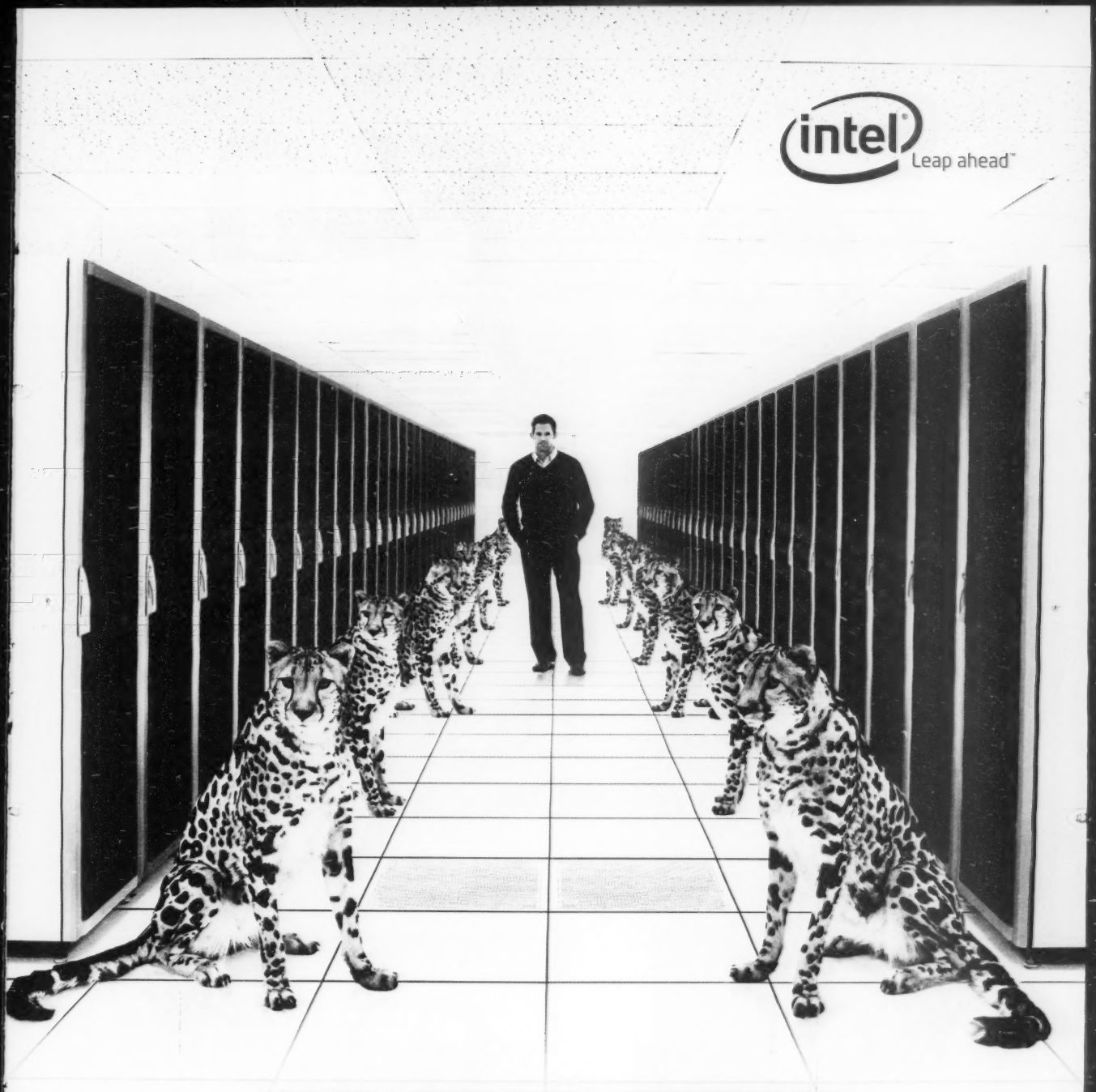
Parallel approaches were built in: If a customer asked about a CD, various options were calculated based on the computed "value" of the customer and presented immediately to the account manager. A purchase became a point-and-click transfer of funds, as fast as a withdrawal. All account types were bundled under one master account number, so new products were easy to add.

These few changes eliminated almost all customer aggravation. Signing up for a new product or changing the terms of an existing one became 30-to-60-second transactions that any teller could perform. The CRM system still presented the account managers with products to offer, based on what the bank "knew" about the customer, but it was less obtrusive.

Account managers could comment quickly about some product that was available and even supply the customer with a flier while the transaction record was being printed. And if the client was interested, an equally fast process would get the customer signed up for the product then and there.

Process design works against this kind of revamp. IT needed to step back from technology and envision the future. The credibility this brings opens doors. ■

Bruce A. Stewart *is CEO of Vancouver, British Columbia-based Accendor Research Inc., an advisory services firm focused on management issues in the technology-enabled enterprise. He can be reached at bruce.stewart@accendor.com.*



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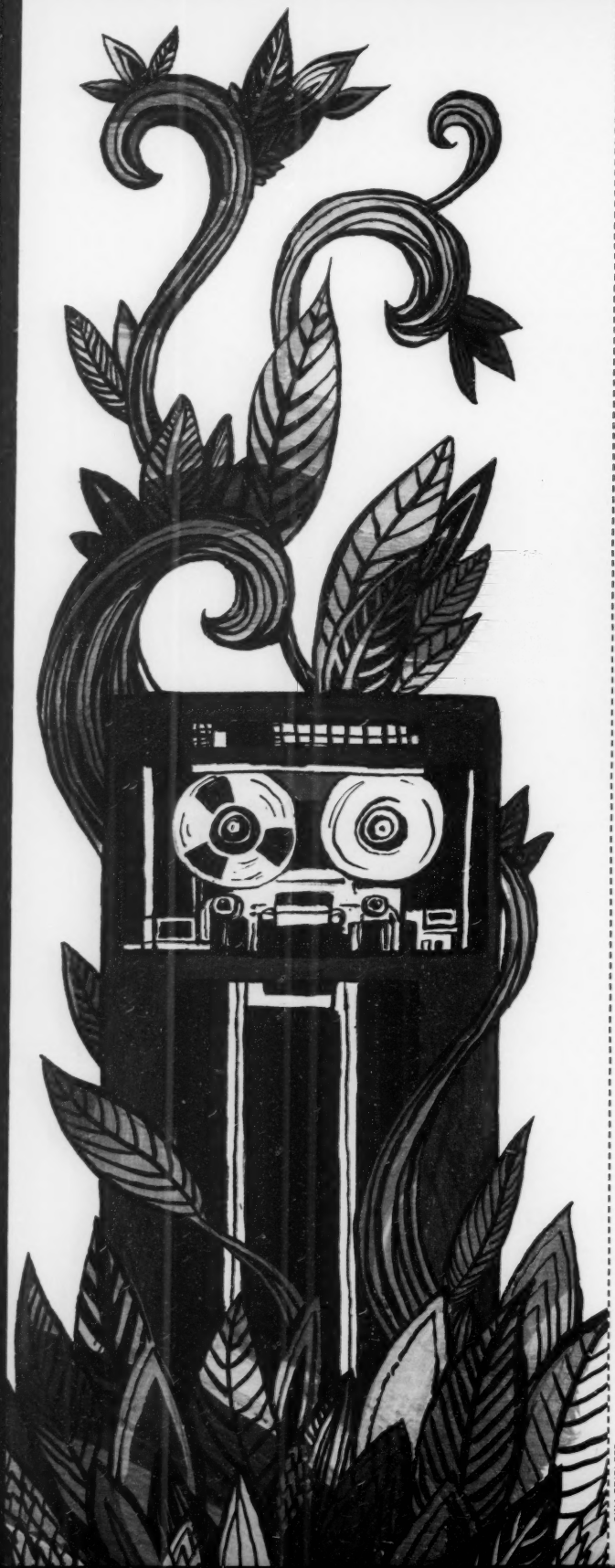
FAQ About Going Green

Thinking about making changes to your data center? Read this first.

By Robert L. Mitchell



GINA TRIPLETT

GREEN COMPUTING is a hot-button issue right now, but not all the ideas out there are practical for data centers. "It's 90% hype," says Ben Stewart, senior vice president of facilities planning at Terremark Worldwide Inc. He's dubious about solar and wind power, for example. But Stewart says 10% of the ideas are win-win: Done right, certain green initiatives can increase energy efficiency, reduce carbon emissions and yield savings.

According to Steve Sams, vice president at IBM Global Technology Services, there's only one way to evaluate green energy options. "If I spent the money, where would I get the best return? That's the question to ask," says Sams. The key is knowing where to start. These four questions and answers can help you develop a plan.

Q: Why should I care about having a green data center?

A: Data center managers who have run out of power, cooling or space are already motivated to move to greener practices. But many others don't care because they put reliability and performance first — and they don't see the power bills, says Peter Gross, CEO at New York-based EYP Mission Critical Facilities Inc. That's likely to change as electricity consumption continues to rise. "Our data centers are a small fraction of our square footage but a huge percentage of our total energy bill," says Sams.

The cost of electricity over a three-year period now exceeds the acquisition cost of most servers, says Gross. "I don't know how anybody can ignore such an enormous cost. It is the second-largest operating cost in data centers after labor," he says. Gross says that every CIO, facility manager and CEO he meets expresses concern about data center energy efficiency.

"My CEO is beating the drum about cutting power consumption," says John Engates, chief technology officer at hosting company Rackspace Inc. in San Antonio. He says just 50% of power coming into the data center goes to the IT load. The rest is consumed by surrounding infrastructure, including power, cooling and lighting. "If you're using less power, you're spending less money. It's just good business," Engates says. (See "Green In and Out," page 46.)

Returns on investment can be difficult to determine, however, because in most cases, the IT staff in a data center doesn't see the power bill. "The single most important step is to find ways to measure efficiency in your facility," says Gross. "You cannot control what you cannot measure."

One way to determine overall data center energy efficiency and provide a benchmark is to hire professionals to do an analysis. An inspection by IBM Global Technology Services costs $50,000 to $70,000 for a 30,000-square-foot data center, says Sams.

But just a one- or two-day engagement might get you most of the benefits for a lot less money, says Rakesh Kumar, an analyst at Gartner Inc. "You can get 80% accuracy with a small investment in consultancy costs," he says. "That's good enough to make some judgments."

Q: What steps can I take to increase the efficiency of my data center's IT equipment?

A: The biggest savings come from server consolidation using virtualization technology. Not only does this remove equipment from service, but it also helps raise server utilization rates from the typical 10% to 15% load today, increasing energy efficiency.

Consolidating onto new servers brings an additional benefit. Power-supply efficiencies for servers purchased more than 12 months ago typically range from 55% to 85%, says Gross. That means 15% to 45% of incoming power is wasted before it hits the IT load. Newer servers operate at 92% or 93% efficiency, and most don't drop below 80%, even at lower utilization levels.

Using virtualization, Affordable Internet Services Online Inc. in Romoland, Calif., consolidated 120 servers onto four IBM xSeries servers. "Now we don't have the power use and cooling needs we had before," says CTO and co-founder Phil Nail. (See "Green Grows the Data Center," page 38.)

Using networked storage can also keep energy costs in check. Direct-attached storage devices use 10 to 13 watts per disk. In an IBM BladeCenter, for example, 56 blades can use 112 disk drives that consume about 1.2 kilowatts of power. Those can be replaced with a single 12-disk Serial Attached SCSI storage array that uses less than 300 watts, says Scott Tease, BladeCenter product manager.

IT managers should demand more energy-efficient designs for all data center equipment, says Engates. He says his company standardized on Brocade Communications Systems Inc. switches in part because of their energy efficiency and "environmental friendliness."

Q: How can I get more out of my data center's cooling and mechanical systems?

A: Getting back to basics is key, says Dave Kelley, manager of application engineering at Columbus, Ohio-based Liebert Precision Cooling, a division of Emerson Network Power Co. "You have to go back and look at a lot of the things that you didn't worry about 10 years ago."

The biggest potential savings come from airflow optimization. For every kilowatt of load, each rack in a data center requires 100 to 125 cubic feet of cool air per minute. Airflow blockages under the floor or air leaks in the racks can cause substantial losses, says Kelley. The typical response to such problems has been to increase the air conditioning temperature — and that's a big energy-waster.

Simple steps such as implementing hot-aisle/cold-aisle designs, sealing off cable cutouts, inserting blanking plates and clearing underfloor obstructions make a big difference. With greater airflow efficiency, air conditioning output temperatures can be raised.

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Read select *Computerworld* stories on green computing at **www.computerworld.com/servers**.

After performing a computerized airflow analysis of its data centers, San Francisco-based Wells Fargo & Co. did exactly that. "In many data centers, you can hang meat in there, they're so cold. With computerized control and better humidification systems, we've raised the set point of our data centers so we're not overcooling them," says Bob Culver, senior vice president and manager of facilities for Wells Fargo's technology information group.

At Pacific Gas and Electric Co. (PG&E), cable races under the floor were blocking 80% of the airflow. The utility expects to save 15% to 20% in energy costs by rewiring under the floor, redesigning the return-air plenum and

Continued on page 36

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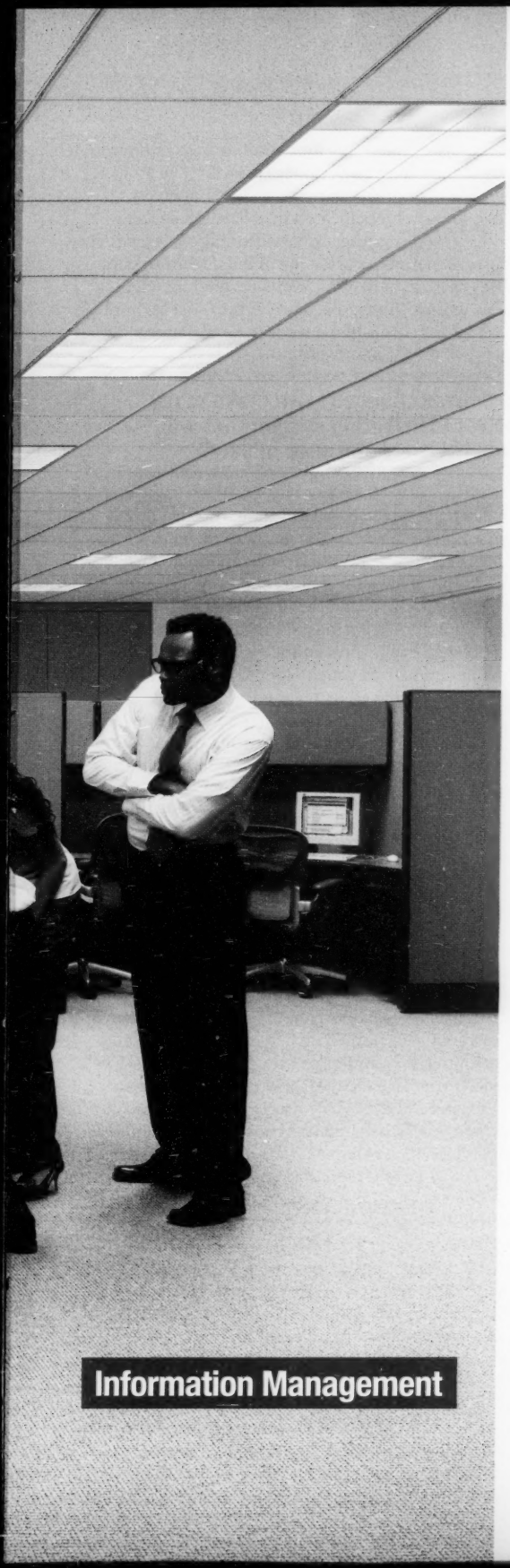

_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business info when these massive volumes of disparate, conflicting information keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, comprehensive and accurate record of info across our source systems. Finally, I can provide a unified, trusted view of our information so everyone can make better decisions.

_Our view of our data is now scalable. Just in time — I think we ran out of quarters.

Information Management

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Consumption vs. Savings

DATA CENTER REQUIREMENTS	
Size	25,000 square feet
Watts per square foot	100
Total power consumed	2,500 kilowatts
ENERGY REQUIREMENTS	
Pounds of coal burned to generate power	6 million
Annual power use	21.9 million kilowatt-hours
Cost of power	12 cents per kilowatt
Yearly electric bill	$2.68 million
SAVINGS FROM 50% ENERGY REDUCTION	
Cost of power	$1.34 million
Annual power use	10.95 million kilowatt-hours
Pounds of coal burned to generate power	3.5 million

SOURCE: IBM

Continued from page 33

carefully choosing and placing perforated tiles in the cold aisles. Choosing the right perforated tile — a seemingly small consideration — can actually make a big difference.

"There are better tiles out there that will give you more efficient distribution of cool air," says Jose Argenal, PG&E's data center manager. The changes also allowed PG&E to avoid adding chillers, pumps and piping — and piping is a potential problem in its older, basement-level data center.

Data center managers can also optimize air conditioning systems by using variable-speed fans, says Ken Baker, data center infrastructure technologist at Hewlett-Packard Co. "AC runs at 100% duty cycle all the time, and the fans have one speed: on," he says. HP's Dynamic Smart Cooling initiative uses rack-mounted temperature sensors, and variable-speed fans allow the power consumption of air conditioning units to vary with the IT equipment load. Intelligent control circuitry manages both fan speed and temperature settings on air conditioners.

> **"I don't know how anybody can ignore such an enormous cost. [Power] is the second-largest operating cost in data centers after labor.**
>
> **PETER GROSS,** CEO, EYP MISSION CRITICAL FACILITIES INC.

It's relatively easy to retrofit existing fans, Baker says, and the approach has two major benefits. One is that cutting fan speed dramatically reduces energy use. A 10-horsepower fan uses 7,500 watts of power at full speed but just 1,000 watts at half speed, he says. The increased efficiency also allows the temperature of the cool air supply to be automatically raised from the typical 55 degrees Fahrenheit to between 68 and 70 degrees, he says.

"The biggest low-hanging fruit is just turning the thermostat up," Baker says. People keep the temperature set too low because they fear that the equipment will overheat after a power interruption before the air conditioning system can get the room temperature back under control. "The truth is that the temperature won't rise that rapidly," Baker says.

Managers of data centers located in colder locales can also save money by designing air conditioning systems that use economizers that take advantage of outside air to cool their facilities during the winter. Wells Fargo implemented such a system in its Minneapolis data center. That technology makes the most sense when designing new data centers.

Q: Are there changes I can make to my power distribution system that will increase efficiency and save money?

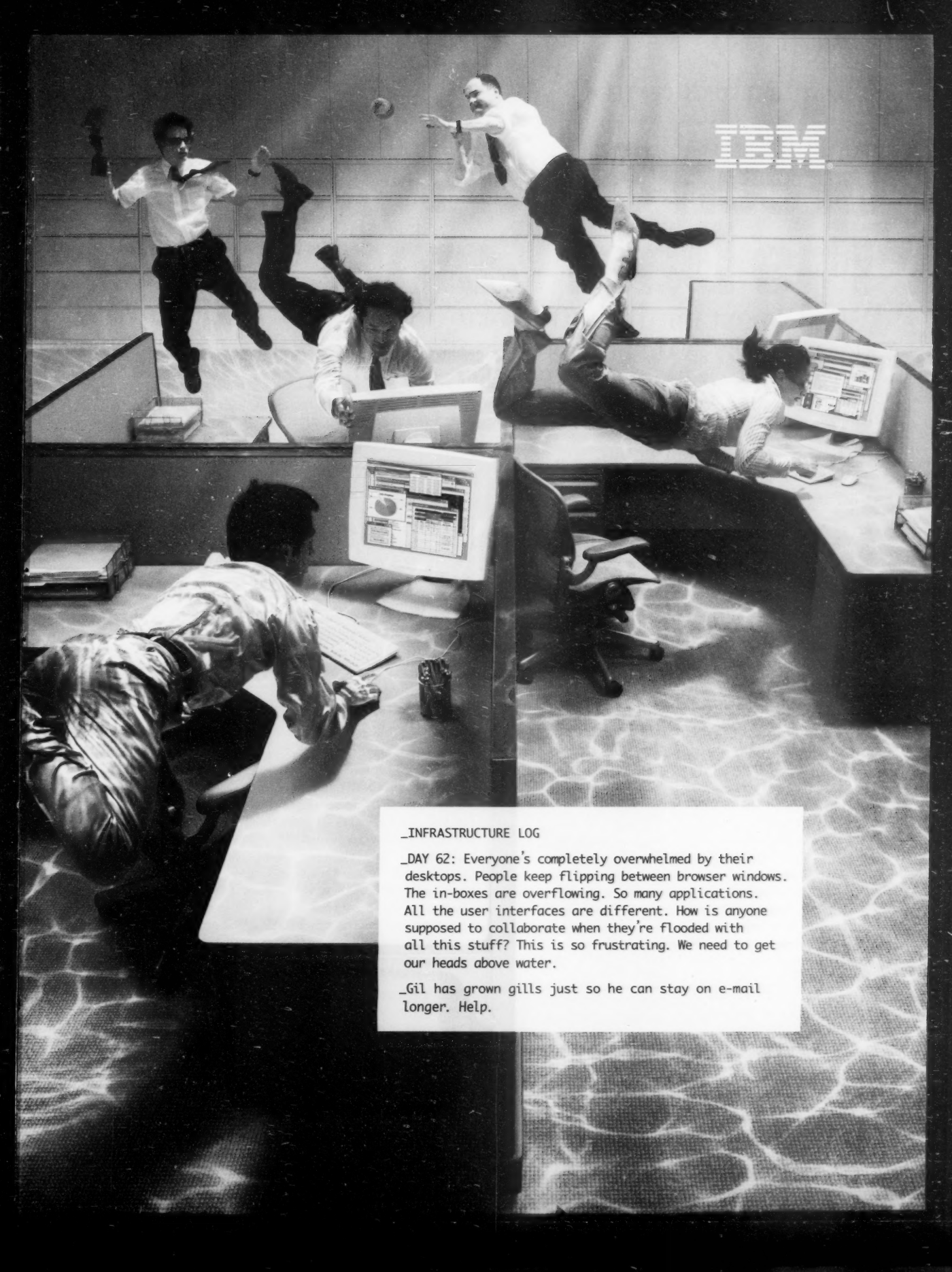
A: Data centers use many uninterruptible power supplies. In fact, when it comes to energy consumption, UPSs are second only to air conditioning systems among components of the data center infrastructure, and they represent one of the biggest areas for potential savings, says Sams. While servers tend to be refreshed every three or four years, data center UPS equipment tends to be much older. The units are often oversized for the load and were never designed to operate efficiently when running at low utilization rates. While older units might run at 70% efficiency at low utilization levels, newer UPSs run at 93% to 97% efficiency even at low utilization levels, Sams says.

Rather than buying traditional UPSs, Terremark Worldwide went with greener technology. It replaced all of its battery-backed UPSs in its Miami data center with rotary UPSs. These use a spinning flywheel to deliver transitional power during the time interval between when power is lost and when generators come online. Stewart says flywheels aren't necessarily more energy-efficient than modern battery-backed UPSs, and the units can be heavy. But they take up less floor space and are greener because there are no lead-acid batteries to dispose of.

Today, Terremark's Miami data center fits 6 megawatts of generators and UPS equipment into a 2,000-square-foot room. "To do that with a static UPS, you'd need three to five times the space just for the batteries," Stewart says.

Efficiencies can also be gained in the power distribution system. Most data centers step voltage down several times, from 480 to 208 volts and then to 120 volts. Kelley says you can reduce conversion losses by bringing 480 volts directly to the racks and stepping it down from there. Stewart says he is considering moving Terremark's system to higher European-standard voltage for the same reason. Most IT equipment already supports a 240-volt feed. He expects to see a 4% efficiency gain. "Our power bill is $400,000 a month, so that adds up pretty quickly," Stewart says.

The best green options will vary with the configuration of each data center. The key to success is to focus on the big picture when assessing overall power and cooling needs, says Gross. "Know what you have, benchmark it, figure out where the low-hanging fruit is, and start one element at a time," he says. ■


IBM
_INFRASTRUCTURE LOG
_DAY 62: Everyone's completely overwhelmed by their desktops. People keep flipping between browser windows. The in-boxes are overflowing. So many applications. All the user interfaces are different. How is anyone supposed to collaborate when they're flooded with all this stuff? This is so frustrating. We need to get our heads above water.
_Gil has grown gills just so he can stay on e-mail longer. Help.

Green Grows The Data Center

What's next for this 100% solar-powered data center? A dirt roof that will cut air conditioning costs by 50%. By Gary Anthes

"WE BELIEVE all life is precious and deserving of our respect, kindness and care," says Endangered Species Chocolate on its Web site. It boast that it buys its cocoa from "small family-owned properties" in Nigeria, where it is grown "in the natural shade of rich, diverse forests."

Endangered Species Chocolate is about as green a company as you will find, so it's not surprising that it selected Affordable Internet Services Online Inc. to host its Web site. AISO, based in the Southern California desert in Romoland, claims to run the only data center in the U.S. powered entirely by solar energy.

But the Web hosting company wants to be greener still. It's in the process of installing a dirt roof that it says will reduce air conditioning costs by 50%. Drought-resistant plants will grow there, fed by water recycled from the data center's air conditioning units, says Chief Technology Officer Phil Nail.

If that all sounds a bit improbable, consider the origins of the company, which now hosts 15,000 Web sites for businesses around the world. Ten years ago, Nail and his wife, Sherry — who is now the "boss lady," or CEO — quit jobs in manufacturing and, with no IT experience, went into the IT services business.

"We were looking for something different to do, and we said, 'OK, this is interesting,' " Nail explains. "We started with a real big blank piece of paper."

The Nails were so inexperienced, they failed to realize that Internet start-ups in the late 1990s were supposed to borrow to the max to leverage their investments. AISO built out its data center entirely with funds from operations — no debt, no leases — and that, Phil Nail says, enabled it to survive the dot-com bust that claimed so many other technology start-ups.

AISO has 120 solar panels — 60 on each side of the data center — providing 12 kilowatts of power. The power is converted from DC to AC and then saved in batteries for, literally, rainy days. Solar tubes pipe in natural light during the day. Three separate Internet backbones back up one another and bring traffic through redundant switches, routers and firewalls. Servers, too, are clustered for backup, and every server has redundant connections to a storage-area network.

The server farm at AISO may be the only thing that isn't growing. Last year, AISO rolled out virtualization software from VMware Inc. and reduced its servers from 120 to four. Nail says he sold the extras on eBay.

He says AISO has invested almost $1 million in its 2,000-square-foot data center so far. A conventional data center of similar capability would have cost about $750,000, Nail says. But monthly expenses are about half those of a typical facility, with savings of $3,000 to $4,000 in electricity costs.

AISO's financial picture can't be used as a guide for other companies, though. Actual energy savings will vary from place to place, depending on latitude and climate, and from state to state, depending on energy prices and whether the state offers financial incentives for energy conservation.

Andrew Kutz, an analyst at Burton Group in Midvale, Utah, says that in addition to its current energy savings, AISO is safeguarding itself and its customers against rising energy prices. There's an element of public relations gimmickry in AISO's green data center, he observes, but that's OK. Says Kutz: "Being green these days is a competitive edge. They are unique, and they are on to something." ■

» "We started with a real big blank piece of paper," says CTO Phil Nail, with wife and CEO Sherry Nail.

AT A GLANCE

AISO
Affordable Internet Services Online Inc.
Romoland, Calif. | www.aiso.net

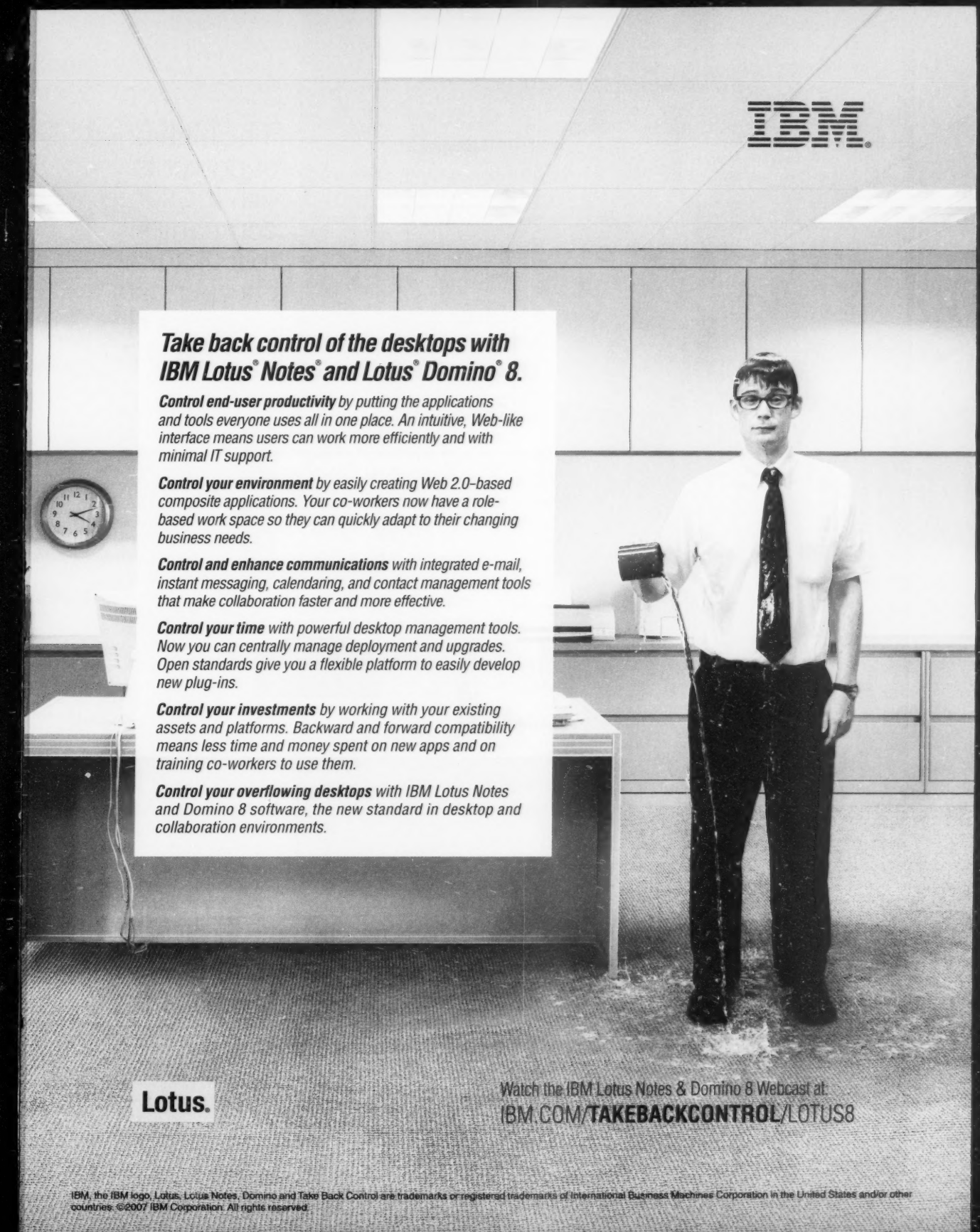
Business: Web hosting from a solar-powered data center

Key players: CEO Sherry Nail and her husband, CTO Phil Nail, co-founders

Size of IT department: Four

Claim to fame: Greenest of all data centers

Cost-benefit: Greater investment in facilities, but ongoing utility cost savings and a big public-relations payoff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» Low real estate and power costs led VistaPrint to move its data center to Windsor, Ontario, says Aaron Branham.

WEBB CHAPPELL

Low-Cost Locations

The high price of power is driving some companies to look for cheaper data center locales.

By Robert L. Scheier

INDUSTRY GIANTS such as Ask.com, Microsoft Corp. and Google Inc. have good reason to build data centers near inexpensive hydroelectric power sources. Their growth depends on serving tens of millions of customers, which requires massive data centers drawing huge amounts of power — no matter how efficiently they are run.

For example, lower electricity costs were a "primary driver" in Ask.com's decision to develop a new data center in Moses Lake, Wash., with its environmentally friendly and comparatively low-cost hydropower, says Chief Technology Officer Chuck Geiger. But the presence of an experienced workforce (and a neighboring junior college to train workers) as well as the availability of a building suitable for renovation were also important.

At Microsoft, data center power consumption has roughly doubled over the past four years and will at least triple over the next five, says Debra Chrapaty, vice president for Windows Live operations. One reason, she says, "is Microsoft's plan to offer customers online storage of digital data" as part of

its Microsoft Live Drive service. Among other moves to hold down electricity costs, Microsoft began operations in April at a new data center located near a hydropower source in Quincy, Wash.

Google says it hopes to create 50 megawatts of renewable generating capacity for its data centers by 2012. The search giant also says it plans to "set an internal cost of carbon" based on the expected impact of future regulations.

In such cases, power represents a "huge percentage of operating costs and the total cost of the data center," says Aaron Branham, vice president of technical operations at VistaPrint Ltd., an online provider of printing services for small businesses. However, he says, "if you've only got one or two racks [of equipment], it's probably not going to justify making a drastic change unless you really want to be environmentally conscious."

BEYOND POWER

In many cases, locating a data center in another part of the country to reap the benefits of low-cost power isn't an option. For some companies, certain locations could cause unacceptable delays in critical applications such as financial trading. But while most companies aren't choosing to relocate data centers solely to save money on electricity, the rising cost of energy is becoming a key issue.

For VistaPrint, the "trigger event" behind a decision to set up a new data center in Windsor, Ontario, was a lack of space in its new headquarters in Lexington, Mass., and the need for a disaster recovery site to back up its main data center in Bermuda.

One reason why VistaPrint chose Windsor was that electricity costs only 7 cents per kilowatt-hour there, compared with 22 cents in the Boston area. But another major factor was Windsor's $7-per-square-foot real estate prices, compared with more than $30 a square foot near Boston. Finally, says Branham, VistaPrint already had a production facility in Windsor and could easily use space available on the second floor above the loading dock for the data center.

Among other variables to consider, says Drue Reeves, vice president and research director at Burton Group in Midvale, Utah, is whether a new data center has the physical space, Internet connectivity and utility connections to grow as the company's needs increase.

Josh Aaron, president of Business Technology Partners Inc., an IT and business consulting firm in New York, advises clients not to commit to a specific building until architects and consultants have confirmed that it meets the company's needs.

When Wachovia Corp. went looking for a new data center location, it considered power costs but didn't make them the main criteria for choosing a site. The search "was mainly driven by the need to mitigate disaster risk," says Jim Houghton, head of utility product management at Wachovia's corporate investment banking service, a demanding user of the company's IT infrastructure. "The other side of it was the organic growth we're experiencing. It has us, like every other major company, bursting at the seams."

Houghton says Wachovia achieved its goals by building the data center in Oxmoor, Ala., which is far enough from two facilities in the Winston-Salem, N.C., area and has power costs that are "relatively similar" to those of Winston-Salem.

Even companies moving to areas with inexpensive power are looking to cut demand by using virtualization to load multiple applications on single servers, encouraging vendors to build equipment that draws less electricity, and developing ways to more efficiently cool their equipment. Through such measures, Microsoft expects to cut its data center power bill 30% to 40% in the next two years.

Wachovia isn't trying to solve the problem by simply building a traditional data center in an area with lower-cost electricity. Instead, the company is working with vendors to produce more-efficient equipment, using technologies such as virtualization and conducting a three-year IT optimization drive to increase the efficiency of its existing IT hardware and software.

Houghton is using Tideway Foundation from Tideway Systems Ltd. to identify which server, storage and network resources support various business applications. That helps ensure he's making the best use of his IT resources as he moves applications from Winston-Salem to Oxmoor. It also delivers immediate savings by identifying underused, or even unused, servers that can be unplugged with little or no impact on users.

At Wachovia, "we're using this as an opportunity to [eliminate] some of our legacy systems and put them on our grid and fabric server computing environments," says Houghton. "We're also making a conscious decision to use more-efficient systems and also fewer physical systems."

"If you're going to move, it's time to take a holistic view of everything that you do," says Branham. "Do you have legacy gear, and is it time to change that? Can you get better consolidation using virtualization technology? In some cases, that can pay for the [relocation] project or help pay for the project."

Taking this overall view "forces the IT administrator to get a handle on all his costs so he can quantify IT in terms of a service," says Reeves. "If you don't do that, everyone else views your data center as a sinkhole of money," instead of understanding how much money the data center helps the company make or save.

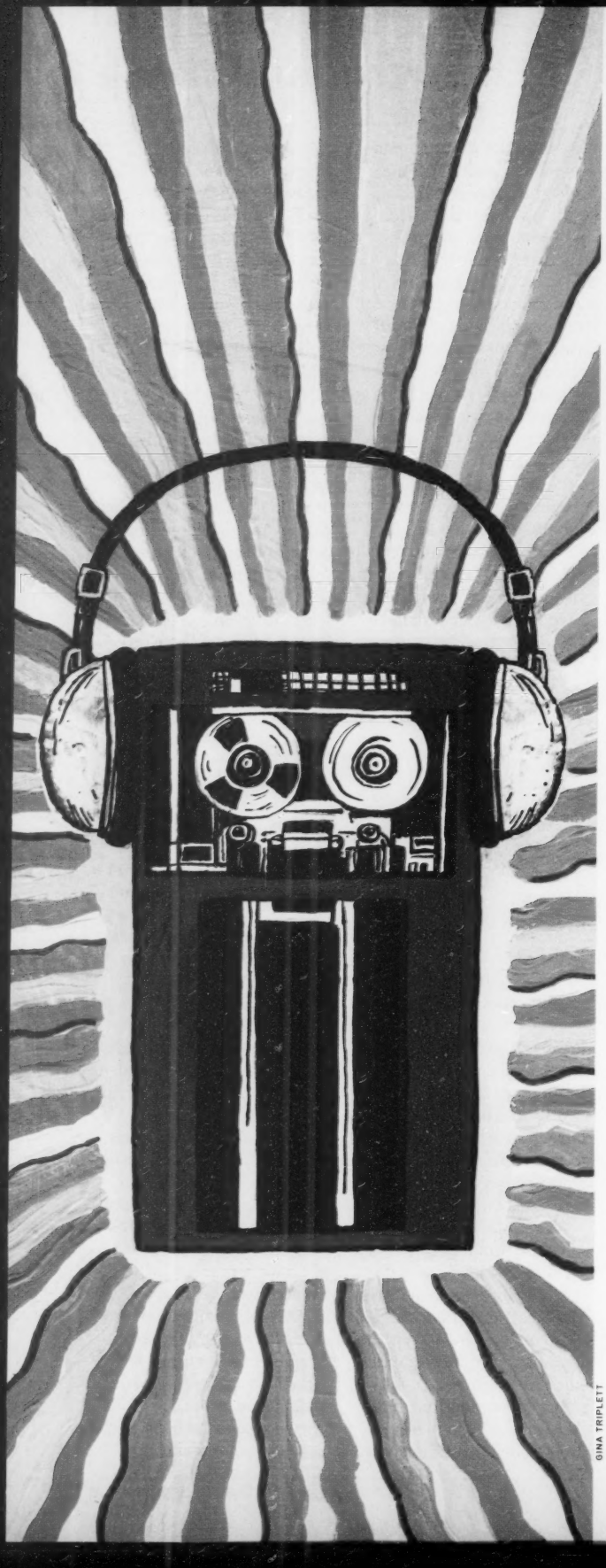
And that's before you even cut a cent or two off your electricity costs. ■

Scheier *is a freelance writer in Boylston, Mass. He can be reached at bob@scheierassociates.com.*

Data Center Site Factors

Electricity costs are only one of the factors that data center managers must consider when choosing a new site. Others include the following:

- Availability and cost of land
- Availability and cost of labor
- Cost and risk in moving existing systems
- Need for a separate disaster recovery site
- Need to avoid latency in time-critical applications
- Tax rates



GINA TRIPLETT

Can You Hear Me Now?

Consolidation and denser equipment make for noisier data centers. Here's how to quiet things down. By Patrick Thibodeau

THE MORE SERVERS that are added to a data center, the more cooling that center is likely to need. And the more cooling those servers require, the greater the "whoosh" generated. Whoosh, for the uninitiated, is the annoying noise of fans and humming power supplies that can feel like pressure building in your head.

Data center workers live with this noise. But there may be reason to start giving it more attention: Data center consolidations and the adoption of high-density equipment — both big industry trends — are bringing more equipment and denser and hotter systems into data centers.

There's a dearth of scientific data on noise in data centers, its health consequences and its impact on productivity. Noise is simply taken for granted by data center managers, who spend little, if any, time measuring sound levels. For the most part, workers just learn to deal with it.

"It's pretty loud; it's pretty stressful," says computer operator Bruno Skiba, who works at a financial services firm and wears ear protection devices similar to the ones used on firing ranges.

Noise, of course, varies from center to center, system to system. It's now fairly common for data center workers to spend a lot of time off the data center floor managing systems in separate rooms. While some racks have whiny, high-speed fans, some Itanium-based servers from Hewlett-Packard Co. have larger fans that are less noisy. Skiba's firm, which he declined to identify, recently got a delivery of those quieter servers.

A LOOMING PROBLEM

The noise generated by the equipment in a data center can be distracting. That fact prompted data center workers at C I Host Inc. to get Bose Corp. noise-

canceling headphones, says Christopher Faulkner, CEO of the Dallas-based hosting company.

"The noise — the pressure on their head, if you will — is very distracting and causes serious issues with [workers] being able to concentrate and do their jobs," says Faulkner.

Faulkner says he has never measured the noise in his data center. That doesn't surprise Tad Davies, executive vice president of Bick Group, a St. Louis-based company that designs and builds data centers. Davies says he can recall only one IT manager who asked for sound-level measurements. "It's been, universally, an issue that has not been brought up," he says.

Davies, without naming the customer, shared a diagram of the data center showing the decibel levels taken in 12 different places in the facility. The lowest was 70 decibels, and the highest was 79 decibels. The highest levels were recorded near heating, ventilation and air conditioning equipment. You have to talk loudly to be heard at those levels, but they are considered safe according to federal standards (see box below). The federal government doesn't require action until workers are exposed to average noise levels of 85 decibels or greater.

Dr. Peter Rabinowitz, a member of the American College of Occupational and Environmental Medicine's Sensory Perception Committee, says he is unaware of any research specifically on noise in data centers. While the Occupational Safety and Health Administration (OSHA) calls for steps such as the use of ear protection if workplace noise reaches a certain level, he notes that even low-level noise from fans, air-handling systems and other typical data center gear can affect concentration and produce fatigue.

ABOVE THE DIN

Normal conversation: **60 decibels**

Sample data center: **70-79 decibels**

Power lawn mower: **90 decibels**

Jet engine at takeoff: **140 decibels**

SOURCES: NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH; BRUEL & KJAER

WHAT'S TOO LOUD?

There is no agreed-upon standard for the decibel level at which data center workers must be protected. If the noise level reaches 85 decibels, that triggers some monitoring under OSHA regulations. If it hits 90 decibels, companies are required to take steps to protect workers' hearing. In contrast, Europe's workplace protections begin at 80 decibels.

The question is, Who's measuring? "I'm not aware of studies that have demonstrated that working in a data center exposes you to hazardous noise. However, there certainly could be something out there," says Mark Stephenson, a senior research audiologist and coordinator of hearing research at the National Institute of Occupational Safety and Health, which is part of the U.S. Centers for Disease Control and Prevention.

"The trend toward larger and larger facilities would have a slow incremental increase in the noise level, so it's possible that something like [crossing the legal threshold for action] would creep up," he says.

Whether noise is an issue for an IT manager may depend on the type of data center.

In some future scenarios — think of this as the ultimate lights-out data center — the facility might be, in total, a computer: a highly interconnected operation with self-healing, self-configuring systems that's managed remotely and is rarely entered by personnel. Noise won't matter as much.

But most data centers are far from the lights-out ideal, and they're run by people like Nick Martin, IT manager at Taco Metals Inc., a maker of marine products in North Miami Beach, Fla. Martin has been in IT since the 1970s and says noise reduction has always been important to him. He especially likes to be able to talk on the phone with a vendor when he's working on equipment — something that once was impossible in his data center.

Martin replaced his ceiling tiles with acoustic tiles and installed the same sound-deadening tiles on some of the data center's walls. "It really knocked the sound down quite a bit," he says.

If he uses a headset, Martin says, it's now quiet enough to "go from my office to the computer room working with the Microsoft tech flawlessly, so there is no interruption in tech support." That matters a lot, he says, because it helps avoid downtime. ■

What Can Be Done?

There's a lot that can affect data center noise levels. For example, lower-power chips can reduce energy needs and cooling requirements. But offsetting those gains is a trend toward putting more low-power chips in compact systems: A 5-kilowatt rack might get replaced with a 20-kilowatt rack as part of a server consolidation.

Manufacturers' attention to noise reduction varies. Some put acoustic mufflers on their racks, but that can also drive up costs. Equipment can be designed to reduce noise, but such a change in manufacturing priorities would ultimately have to be driven by customer demand.

Although vendors are aware of noise issues, buyers aren't pressing them to make it an important consideration in design, says Don Beaty, a consulting engineer. Beaty is former head of the American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc.'s Technical Committee 9.9 for mission-critical facilities, technology spaces and electronic equipment.

"If [users] are not pushing back on the manufacturers, why would the manufacturers spend the money or make that a main criterion?" says Beaty, referring to noise levels. "They are applying their own value system instead of [those of] their customers."

More vendor focus on the issue would lead to improvements, he adds. "A base design would include more noise mitigation," says Beaty. But vendors will also be concerned about whether noise mitigation increases power needs or whether special parts like acoustic doors make equipment harder to work on, he notes.

Wade Vinson, a thermal strategist at HP, says data centers are faced with regulatory limits on the amount of noise they can generate, forcing data center managers to implement hearing-protection programs. "In many ways, servers being quieter can be a competitive advantage for some companies," he says. Vinson also notes that trying to keep fan power down – by using aerodynamic fans that can adjust speeds depending on server load – can reduce total power use, a major consideration for IT managers. "We have a big incentive to keep fan noise down, and that's to save power," he says.

As users upgrade to larger servers and bring more power and air conditioning into their data centers, says Vinson, "for the first time, they are going to start to be more cognizant of the noise levels as they try to increase the density of equipment."

– PATRICK THIBODEAU

LEED Certification

The LEED rating system encourages energy conservation. By Russell Kay

FOR MANY YEARS, the environmental movement has urged the development of buildings that are not only more energy efficient, but also use recycled materials, conserve water, have a reduced impact on the local environment and provide a healthy indoor environment for employees.

This effort was formalized in 1993 with the formation of the U.S. Green Building Council, a nonprofit organization in Washington. The USGBC embodied efforts begun by Robert K. Watson, senior scientist and director of the international energy and green building programs at the Natural Resources Defense Council from 1985 to 2006. He was active in international sustainable building, utility and transportation efforts in many countries, including China, the U.S. and Russia.

LEED was intended to define green building by establishing common, measurable standards; promoting integrated, whole-building design practices; recognizing environmental leadership inside the building industry; and raising consumer awareness, among other goals.

FOR MORE INFORMATION

- **More information on the U.S. Green Building Council** can be found at *www.usgbc.org*.
- A description of **Google's carbon-neutral initiative** can be found at *www.google.com/corporate/green/energy/*.
- **For information on IBM's push to increase energy efficiency in IT**, see *www-03.ibm.com/press/us/en/pressrelease/21524.wss*.

BECOMING CERTIFIED

To receive LEED certification, a developer applies to the USGBC, documenting the building's compliance with LEED goals. Depending on the nature and use of the building, it must meet a basic set of prerequisites; to that, numerous credits are added, depending on the building's specific design and construction. Innovation is encouraged. The application process uses a series of online, active PDF documents that largely automate the LEED Green Building Rating System.

A building can qualify for one of four levels: Certified (scores 40% to 50% of non-innovation points), Silver (50% to 60%), Gold (60% to 80%) or Platinum (over 80%). Project teams are required to pay certification review fees upfront. The fees are refunded for buildings that achieve Platinum certification.

Although the USGBC doesn't support a specific rating for them, data centers are vying for the green label. LEED certification is focused largely on building infrastructure, so data centers are handled as new construction and major renovations, or as commercial interior remodeling.

The first two data centers to receive LEED certification were mortgage company Fannie Mae's Urbana Technology Center in Maryland, and a data center for Highmark Inc., an insurer in Pittsburgh, earlier this year. In addition, IBM has announced that it will apply for LEED certification for a data center in Boulder, Colo., and hosting company 365 Main Inc. has pledged to build all future data centers in accordance with LEED guidelines. Although it made no specific reference to LEED or the USGBC, Google Inc. has pledged to become carbon-neutral by 2008 by emphasizing energy conservation, using renewable energy sources, offsetting carbon emissions and investing in eco-friendly new technologies.

Although the LEED rating system tries to be sensitive to specific local environmental conditions and requirements, its checklist-based approach tends to bury some important differences. For example, a building in Maine could receive the same credit for water conservation as one in Arizona, where water use is obviously a more important consideration.

Finally, successful LEED certification usually entails working with an architect, a builder and a consultant already well versed in the requirements of the USGBC. ■

Kay *is a* Computerworld *contributing writer in Worcester, Mass. You can contact him at russkay@charter.net.*

Definition:

Leadership in Energy and Environmental Design-certified buildings have demonstrated energy conservation and addressed concerns for site development, water savings, energy efficiency, materials selection and indoor environmental quality. Certification comes after compliance with the requirements of the LEED Green Building Rating System, a nationally accepted benchmark established by the U.S. Green Building Council.

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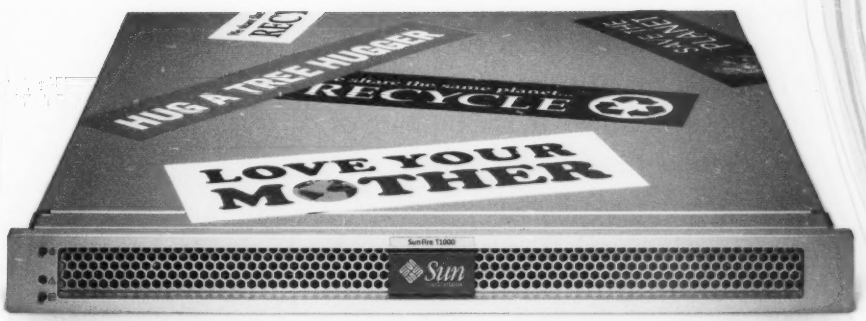
A Rating for Every Project

Distinct versions of the LEED rating system have now been created for the following types of projects:

- **New construction and major renovations** (the most common LEED certification)
- **Existing buildings**
- **Commercial interior remodeling projects carried out by tenants**
- **Core-and-shell projects** (includes structure and building-level systems, such as central HVAC)
- **Homes**
- **Neighborhood development**
- **Schools**, recognizing the unique requirements of K-12 facilities
- **Situations involving multiple building sites and campuses**
- **Retail applications**, using either the rating system based on new construction and major renovations or commercial interiors



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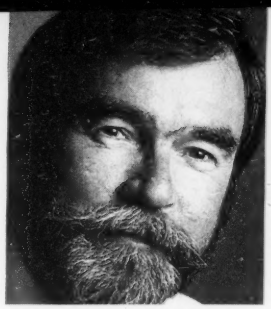
Mark Hall

Green In and Out



THERE ARE two kinds of people: optimists and pessimists. Sadly, I'm one of the latter. So I wasn't surprised when the vast majority of scientists concluded that human contributions to the buildup of greenhouse gases are a key component of global warming.

I sometimes wonder, What's the use? After all, China and India are just getting started as major producers of greenhouse gases, and the U.S. government seems unwilling to lead this nation in efforts to conserve energy. The future looks very bleak.

Unless you talk to the right optimists.

I recently had the privilege of chatting with John Engates, chief technology officer at Rackspace Managed Hosting in San Antonio. His company has eight global data centers running more than 30,000 servers for 10,000 customers, primarily small and midsize companies.

Engates is not only an optimist, but he's also someone with the authority to make changes in how his company consumes energy within its core business operations — the data center.

Naturally, Rackspace is already doing a lot of the things that experts say can cut energy consumption in the data center (see "Seven Steps to a Green Data Center," June 25, 2007).

Like many organizations, the company is aggressively pursuing server virtualization. The goal is not only to reduce its server count, but also "to get better utilization of system memory," Engates says.

As Robert Mitchell pointed out (see "Memory: The New Power Hog," April 30, 2007), RAM power requirements in new servers are double those of CPUs.

As data center managers seek to cut power costs, servers get most of the focus. But Rackspace looks at all the gear it uses. Energy concerns now affect how the company buys and deploys network switches and routers. Engates' goal is to reduce unused network ports, which translates into fewer machines and less power used.

■ 'Thinking green' goes beyond looking at what you plug into an electrical socket.

Engates emphasizes that "thinking green" goes beyond looking at what you plug into an electrical socket. You need to look at your entire operation. Because Rackspace buys so many identical servers from the same vendor, it has arranged for the supplier to stop including redundant cables and manuals in each box, so there's less packaging to throw away.

At a more strategic level, Rackspace has committed to using electricity generated from renewable resources. Its new data center in the U.K. will be run completely by biomass-generated power.

"Its electricity that will be grown instead of mined," Engates says.

For each server Rackspace buys and places in U.S. data centers where renewable energy sources aren't available, the company buys offset energy credits from Native Energy LLC in Charlotte, Vt. Native Energy uses that money to develop renewable-energy projects. And Rackspace has joined The Green Grid, a consortium dedicated to cutting data center power consumption.

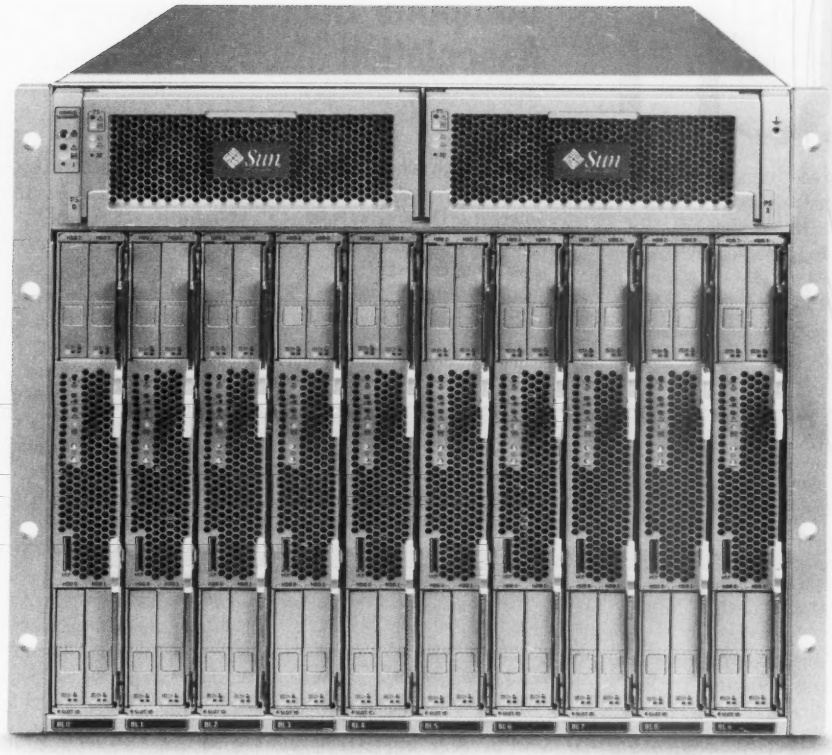
But being green goes beyond the IT department, Engates says. To that end, Rackspace holds "Green Days," where everyone in the organization can learn about ways to cut their own personal carbon footprint. At these events, workers are introduced to everything from Toyota's hybrid Prius to the local dry cleaners' green cleaning techniques.

There's more Rackspace can do, Engates says. And he admits that one company alone won't save the planet from overheating. But Rackspace will keep plugging away.

"And progress is being made," Engates insists optimistically.

Indeed, after chatting with him, this is one pessimist who is a bit more hopeful. ■

Mark Hall *is a* Computerworld *editor at large. Contact him at mark_hall@computerworld.com.*



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Career Watch

Business Meets Academia

>>> HOW U.S. COLLEGES AND UNIVERSITIES ARE WORKING WITH THE PRIVATE SECTOR TO DEVELOP NEXT-GENERATION IT LEADERS

SCHOOL: Joseph M. Katz Graduate School of Business, University of Pittsburgh

DOES IT HAVE AN IT ADVISORY COUNCIL? No, but it has a board of visitors that provides periodic input on the curriculum.

IT EXECUTIVE FEEDBACK THAT HAS HELPED AMEND THE CURRICULUM: Pittsburgh-area CIOs and IT directors have requested more course content on legal and regulatory issues, such as the Sarbanes-Oxley Act and the Health Insurance Portability and Accountability Act. While the university hasn't created any specific regulatory or legal courses, last fall it added content to existing undergraduate coursework, and it plans to introduce additional content on the graduate level this fall.

POSTGRADUATE PROGRAMS OFFERED: Master's degrees in MIS and bioengineering; a dual-degree MBA/master's of science in engineering

NUMBER OF MASTER'S DEGREES AWARDED IN SPRING 2007: 15

At the master's level, the university is increasingly emphasizing the development of IT leadership skills. Brian Butler, associate professor of information systems and MIS group coordinator, says the goal is to make degree candidates consider challenges such as how they would go about creating and setting security policies or how to work best with the legal department.

Business concerns are getting more attention even at the undergraduate level, where Pitt's core IS courses identify processes aimed at achieving business improvement. "What we're trying to give [students] is a perspective of what to fix in the organization before they're thinking about technological issues," says Enrique Mu, director of the MIS program.

In focus groups held at Pitt since last winter, CIOs have said that they are seeking job candidates "who can manage change through their communications and listening skills," says Terri Gregos, assistant dean and director of career services.

– THOMAS HOFFMAN

PAGE COMPILED BY JAMIE ECKLE.

■ **Q&A**

Chris Stephenson

The executive director of the **Computer Science Teachers Association** discusses hooking students on IT careers early.

You say high school is the best time to grab students' interest in IT careers. How should the K-12 curriculum change to do that? Students and their parents have many misconceptions about the field, and it is essential that we let them know that there are job opportunities and that these jobs are important and connect to things that students care about in the real world. The high school curriculum needs to reflect the true richness of computing. Too many high school courses are either applications courses (how to use specific pieces of software) or programming courses (learning Java syntax). A comprehensive computing curriculum includes a variety of age-appropriate courses that teach the underlying scientific concepts of computing while helping students understand that there are many kinds of computing – artificial intelligence, bioinformatics, robotics – all of which can help solve real problems.

Do we have the teachers we need for improved high school instruction? Right now, we have a critical shortage. The primary problem is that teacher certification requirements in most states are a complete mess. Usually, they require CS teachers to be certified in some other area altogether. And because computing is not a core course, even the best CS teachers cannot be considered "highly qualified" under No Child Left Behind. We have also found that very few programs are available to train future CS teachers.

What else is the CSTA doing to increase interest in the field? CSTA provides a solid curriculum framework and resources to support its implementation. We work in partnership with colleges and universities to offer top-notch professional development opportunities to help teachers develop both their technical and teaching skills, and we conduct research on issues such as teacher certification and what is currently taught in computing classrooms. Perhaps most importantly, we also help administrators and policymakers understand that there is a direct link between supporting computer science education in K-12 and maintaining our innovative and competitive edge in the global marketplace. Other countries have figured this out, and we have a lot of catching up to do.

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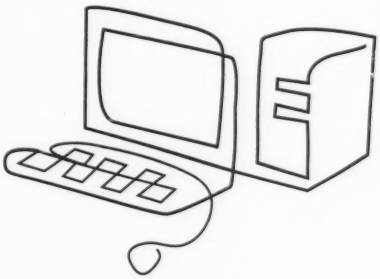

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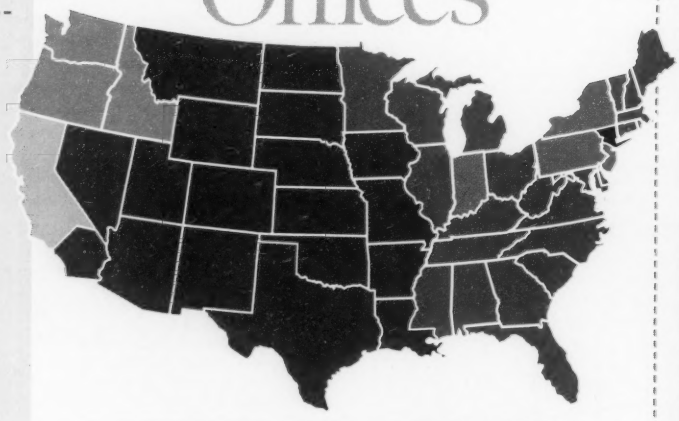

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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Think It'll Help?

Company president tasks pilot fish with creating a database for tracking sales leads. "He said, 'We're losing all this data because it's not in a central location,' " says fish, who whips up the form-driven application posthaste. But when an administrative assistant starts entering sales contacts, she's stumped – the new app won't let her create a record without all the required fields filled in, and much of the info she has is incomplete. Admin goes to the president, who tells fish, "Allow a blank option in mandatory fields. If I only have a name and a phone number, I want to be able to enter them into the database." Sighs fish, "I'm keeping a copy of the directive, so when he complains that the data is incomplete and useless . . . "

Kinder, Gentler IT

Pilot fish passes along an internal program change notice: "Change Notice 12345 discussed a number of changes to the 'My Favorites' setup. One of those changes was a new field called 'Explode upon launching.' We have renamed that to 'Auto Expand.' Company associates thought that the old name sounded a little traumatic."

That's One Way Of Putting It

Net admin pilot fish gets a call from a user who complains that her floppy drive won't read her diskette. Fish grabs a replacement drive, heads to user's office and swaps out the hardware, then asks for the diskette so he can test the new drive. "To my amazement, she handed me a U-shaped object," says fish. "She said, 'I left it on the windowsill in the sun over the weekend. Do you think the heat corrupted my data?' "

Seems Clear Enough

Supervisor calls help desk to report that she can't find the new document she was working on before she left for a meeting. What did you do to the document before the meeting? pilot fish asks. "I closed it and exited the program," supervisor says. Fish: Did you save the changes when prompted? Supervisor, patiently: "No, because I wasn't done typing it, and I had to go to the meeting."

Nice, But Unlikely

User complains that she isn't able to forward mail from her work account to her personal e-mail account and wants e-mail admin pilot fish to fix the problem. Fortunately, she does forward the non-delivered-mail error message: "Your message did not reach some or all of the intended recipients. . . . The message could not be delivered because the recipient's mailbox is full." Grumbles fish, "It would be nice if the users would ever bother to actually read the messages."

■ *Sharky will read everything you send him at sharky@computerworld.com. And if you send me your true tale of IT life, you'll get a sharp Shark shirt if I use it.*

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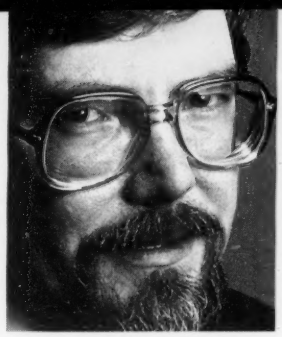
■ FRANKLY SPEAKING

Frank Hayes



Rewiring Respect

WHY DON'T IT people get more respect? On this Labor Day, things are actually looking better for people who work in corporate IT. Budgets aren't quite so tight. Companies are hiring. Interesting IT projects are getting a green light. But when it comes to how our fellow employees think about us, IT work is a train wreck. Users break the rules we set up, ignore the processes we develop and generally act as if we're clueless in what we do.

But why? As it turns out, it's not just us.

According to a recent survey by management consulting firm Katzenbach Partners, it isn't just that employees won't follow the rules and procedures they get from IT. More than one-third of employees surveyed — 37% — said they ignore company rules when they've developed a better way of getting work done. Not just IT rules. *Any* rules.

Wait, there's more: 63% of big-company employees said they wouldn't waste their time taking their ideas to senior management. And 65% said they rely on themselves and coworkers, not management, to solve business problems as they come up.

Users don't think management has a clue either. And they may be right.

After all, the big bosses believe in the organizational chart. Users know that's not how the organization works.

So does the Katzenbach analyst who ordered up the survey, Zia Khan. He points to what he calls the "informal organization" — the network of people and processes that don't match up with the org chart and formal procedures but are actually the way things get done.

You know what that is: employees who cut corners, get their advice from the wrong people, use procedures to do things they're not designed for. Why? Because cutting corners gets the job done faster. The "wrong" people give more useful advice than the "right" people. And never mind what a procedure was designed for; if it works, it works.

■ The users have rewired the business – and they keep rewiring it all the time.

Annoying, aren't they? Worse still, they make us look bad. We build IT systems based on org charts and management's version of how business processes work. When those systems confront the "informal organization" reality, there's a mismatch. Our systems don't do what users need.

No wonder they think we're clueless.

And no wonder we keep getting it wrong. The organization doesn't actually operate according to the specs we've been given. The users have rewired it — and they keep rewiring it all the time, based on new customer needs, market demands and whatever tricks and shortcuts they can come up with.

But we still design systems to the old, outdated specs. Then, when we discover that the real, functioning organization doesn't match the specs, we try to fix the organization by creating new rules to make it conform. And users just ignore those rules — or rewire their way around them.

We're wasting everybody's time. And we don't have to.

Instead of believing the org chart when we build or fix a system, we could pay attention to how things actually work. If we understand that informal organization, we can map business processes to it and deliver IT systems that do what users need, not what we think they ought to need.

Then maybe users wouldn't ignore our rules and processes if they had a better way. We'd deliver their better way.

Over the past few years, we've been told that the future of IT work isn't just bits and wires, that we'll need to master the intricacies of the business in order to deliver the systems it needs.

But maybe it's easier than that. Maybe we don't have to master the business, but just listen to the people who actually know how it works.

If we respect what they know, they might just respect us, too. ■

Frank Hayes *is* Computerworld*'s senior news columnist. Contact him at frank_hayes@computerworld.com.*

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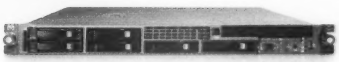

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1. A HP SC11Xe Host Bus Adapter ($209) is a required option needed to connect the Ultrium 448 solution to the DL360 G5 server. Prices shown are HP Direct prices; reseller and retail prices may vary. Prices shown are subject to change and do not include applicable state and local taxes or shipping to recipient's address. Offers cannot be combined with any other offer or discount and are good while supplies last. All featured offers available in U.S. only. Savings based on HP published list price of configure-to-order equivalent ($5125 - $1426 instant savings= SmartBuy price $3699). 2. Financing available through Hewlett-Packard Financial Services Company (HPFS) to qualified commercial customers in the US and subject to credit approval and execution of standard HPFS documentation. Prices shown are based on a lease 48 months in term with a fair market value purchase option at the end of the term. Rates based on an original transaction size between $3,000 and $25,000. Other rates apply for other terms and transaction sizes. Financing available on transactions greater than $349 through June 30, 2007. HPFS reserves the right to change or cancel these programs at any time without notice. Intel, the Intel Logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries. © 2007 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice.

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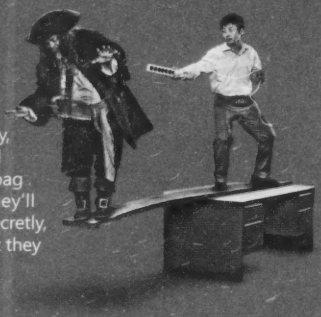
beating back pirates. easy.

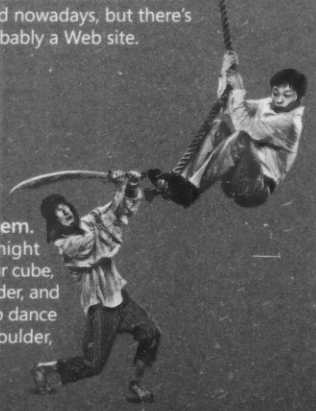
1. Think like a Pirate.
The best way to defeat a Pirate is to think like one. After a few days of grog-swilling and rigging-swinging, you'll be ready to take them on, as an equal. If nothing else, you'll have had a fun couple of days.

2. Walking the plank.
Pirates are big on getting their victims to walk the proverbial plank. Use this against them. Pose as a plank salesman; pitch a new, better plank. Ask them to "test the plank" and, once they're out on it, reveal the truth. The humiliation might just get them to leave.



3. Pay them off.
Pirates are obsessed with booty, or treasure. A supply of gold chocolate coins placed in a bag or chest will dazzle them. They'll want to bury it somewhere, secretly, and will lose whatever interest they had in you in the first place.

4. Use your skills of Beard-Fu.
Beard-Fu is the ancient art of facial hair combat. Grab and pull the Pirate's beard, yank a sideburn—if done properly, it's the deadliest of all martial arts. Finding a Beard-Fu teacher can be hard nowadays, but there's probably a Web site.



5. Beat them, then join them.
Life as a high-seas scalawag might not be so bad. You'll escape your cube, see the world, pillage and plunder, and have a grand old time. Learn to dance a jig, wear a parrot on your shoulder, and you're off.

beating back spyware. easier.

1. Implement Microsoft Forefront.
Forefront™ makes defending your systems easier. It's a simple-to-use, integrated family of client, server, and edge security products (such as Forefront Client Security) that helps you stay ahead of your security threats more easily than ever. For case studies, free trials, demos, and all the latest moves, visit **easyeasier.com**

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